

“Coastal erosion at Thorpeness and lessons for the Sizewell C Project”

- written representation by Frances Crowe to the Planning Inspectorate in respect of the DCO for Sizewell C, June 2021.

This paper is Paper 2 of 6, submitted as part of the written submission for Deadline 2 by Frances Crowe. A written representation summary of all my submissions for Deadline 2 will be separately submitted.

I am a resident of Sudbourne. I have lived here with my family since 2001 (20 years), previously holidaying frequently in the area. My written representation includes a detailed paper on air pollution (*‘Air pollution [tropospheric ozone and particulates PM2.5]’*) and a more general paper covering a range of other concerns (*‘Transport, health and other matters’*). I am also submitting three very short papers on radioactive emissions, water discharges and diesel generators, which were also submitted to the Environment Agency in September 2020. All six papers will be submitted separately for Deadline 2.

All issues were referred to in my relevant representation.

A transcript of my oral representation (presented on 18th May, 2021) has been separately submitted.

As this paper exceeds 1500 words, a brief summary of content is also included here.

Summary of content

This paper presents evidence of the recent coastal erosion and failed sea defences at Thorpeness, primarily through photographs taken over the last 15 years.

Evidence includes:

- The loss of the pillbox from the clifftop which now acts as a marker for coastal retreat
- The building of coastal defences in 2010 and geo-textile defences in 2013
- The embayment that has resulted from the coastal defences
- Evidence of the coralline crag that is washed up after storms
- The impact of unusual sea action, which affected Thorpeness almost uniquely in October 2013
- Current destruction of the sea defences and severe cliff erosion
- Large quantities of coralline crag washed up in last winter’s storms

This paper will additionally demonstrate the importance of these events in consideration of the Sizewell project.

Background

Living here for the last 20 years, I have walked the beach between Thorpeness and Sizewell literally hundreds, perhaps a thousand times. I have documented the changing cliffs in photographs over many years, and have personally witnessed how vulnerable this coast is. I was there in January 2017 10 minutes after the cliff fall that buried a man. So unexpected (and huge) was the fall, it could have been me who was buried (even though I know these cliffs well, I never expected a fall of this enormity) or one of the many children I had seen scrambling along these cliffs at high tide just a few hours earlier. It took over 40 people from the emergency services more than 2 hours just to locate the body, such was the scale of this cliff fall - on just one ordinary sunny January day....

This is not a new phenomenon.

The pillbox bulldozed off the cliff in 2007 at this same spot now lies 25 metres seaward of the cliff edge, a reminder of just how friable and temporary this coast is.

But this is not just a phenomenon of Thorpeness... It is the same all along the East Anglian coast: Felixstowe, Bawdsey, Orford Ness (where we lost our lighthouse only last year), Dunwich, Easton Bavents, Covehythe, Lowestoft... have all suffered recent losses. And millions of pounds have been spent trying to hold back the sea at least temporarily in this region.

And this is not a recent development. Attrition of our sandy coastline has proceeded unhalted for a millennium and beyond: the Moot Hall in Aldeburgh used to be in the heart of the town, lying west of a number of streets all now lost to the sea. And in the 11th century, Dunwich was one of the greatest ports on the east coast, the tenth largest place in England, a crusader port, a naval base, and a religious centre with many large churches, monasteries, hospitals, grand public buildings and even a mint. All now lying under the sea.

And all has happened within just a few kilometres of Sizewell.

People always think the apparently unlikely will never happen - yet it inevitably does.

Furthermore, we now know that the erosion will be made worse by climate change - by more frequent storms and by sea level rise. Each time scientists re-evaluate, the future looks worse - it moves only in one direction.

In this paper I will document these changes in just one place - Thorpeness 2 kms south of Sizewell - mostly through photographs over the most recent 15 years. In particular, I wish to draw to the Inspectors' attention the very recent erosion at Thorpeness and the substantial failure of sea defences put in place only 8-11 years ago - approximately 15 years earlier than anticipated. There is no budget for the multi-million pound spend that would be necessary to repair these defences. This is a very small example on Sizewell's doorstep of how we miscalculate the force of the sea, fail to plan ahead and fail to take timely action and

of how millions of pounds (if available) can be spent in ultimately futile attempts to hold back the sea. Moreover, the evidence of this failure now scars the beach providing a significant hazard to beach visitors.

For these reasons this site is highly recommended for a site for visit by Inspectors (recommendation submitted, 11/5/21).

A chronological visual account of erosion at Thorpeness

- The cliffs north of Thorpeness (north of Pt 2 on the map in Appendix 1) clearly indicate the friability of this coast and why it is one of the fastest eroding coastlines in Europe. (Photos 9-12). This site is only 2 - 3 km from the reactors and waste storage at Sizewell, which has very similar coastal geology to Thorpeness. Similar erosion is happening in places all along the East Anglian coast - for example, Felixstowe, Bawdsey, Orford Ness, Dunwich, Easton Bavents and Covehythe.
- The cliff erosion north of the defences demonstrate the 'embayment' effect that occurs on land at either end of a significant hard sea defence. (Photos 10 & 18). The larger the sea defence, the greater this embayment is likely to be. For comparison, see the last Photo 1 taken in 1993, showing no signs of embayment before the construction of these sea defences. The embayment impact of the proposed Sizewell C sea defences could be highly significant and affect large distances, given their size.
- There is major damage to the sea defences in this location. This has led to a huge breach at the northern end (pt 2 on the map), leading to a significant loss of cliff (and gardens of two houses on North End Avenue).
- This site illustrates the unpredictability of sea defence failure. The decimation of the sea defences here (especially the north end) has happened after only 8-11 years of their life despite this being expected to be an estimated 25 years. The damage was not the result of any storm surge but just 'normal' attrition, especially over the winter months of 2020/21. (Photos 13-16 & 18-19).
- The failure also demonstrates the inadequacy of existing coastal planning processes. Although the defences were known to have a limited lifespan, I am not aware of any measures (or budget) being put in place for their end of life management.
- The site also highlights the difficulty in remediating failed defences and illustrates their impact on visitors and residents. The failed defences now are restricting valuable access along the beach and represent a significant hazard and eyesore to beach visitors. (Photos 14-17). Additionally, they are now partially ineffective in defending residential properties. Significant cost and disruption will result, regardless of whether the sea defences are repaired, replaced or left to retreat.
- The pillbox offers a useful indication of the extent to which the cliff has receded in the last 15 years. It now lies an estimated 25 meters seaward of the cliff face. (Photos 3 & 18).

- The large amounts of coralline crag washed up on the beach last winter may be indicative of increased vulnerability of the offshore reef that helps protect Thorpeness and Sizewell, possibly due to ocean acidification, increased sea temperatures and/or greater storm activity. Analysis needs to be undertaken by the applicant to establish how robust this reef is and the degree of loss/damage.

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Photographs

1. Collaged photos taken in 1993, showing Pillbox I and the chimneys of the Red House on North End Avenue. No embayment noticeable and access to the beach was still possible from the cliffs at this time by the footpath just north of The Red House.



2. Thorpeness beach, July 2006. Note vegetated cliffs beyond last houses and prominent summer house on clifftop (in the garden of The Red House) - now lost to the sea. No embayment at this time.



3. The southernmost World War II pillbox (approx. 50 meters north of pt 2 on map in appendix 1) - photo taken in 2007, soon after it was bulldozed off the cliffs.



4. Recently constructed sea defences (stone filled gabions), May 2010.



5. Reinforcement of sea defences, including addition of geo-textile bags, 19th February, 2013



6. New geotextile sea defences in place -16th April 2013.



7. Erosion at Thorpeness, October 2013, in front of Tinkers End at the end of Old Homes Road - unusual sea conditions led to the loss of 3 meters of beach overnight.



8. Typical winter cliff erosion, cliffs between Thorpeness and Sizewell, 14th January, 2014.



9. Winter cliff erosion, looking north towards Sizewell - 17th January, 2014



10. The cliffs immediately north of the gabion sea defences and The Red House. Embayment is now visible in the area, as well evidence of extensive ongoing cliff erosion. 17th January 2014.



11. Cliffs north of Thorpeness, 19th Feb 2014.



12. The cliff and beach in front of The Red House, 5th June, 2016. Notice that the cliff above the gabions is well-vegetated, in theory offering greater protection.



13. Initial breakdown of the gabion sea defences in front of the Red House with erosion beginning in the sandy cliff behind - 9th Jan 2021.



14. The cliffs in front of The Red House - 6th March 2021.



15. Destroyed gabions at the northern end of the sea defences - 6th March, 2021.



16. Beach at low tide. One day works to shore up defences and add rock to the least damaged defences at the southern end - 10th May 2021.



17. Pillbox, just visible on the tideline before the houses on the cliff, is now an estimated 25 meters from the base of the cliff - May 2021.



18. The cliff and beach in front of The Red House, 23rd May 2021 (note loss of garden wall, fenced decking area, palm tree and summer house, further garden outbuilding now at risk)



19. 23rd May 2021 - further view of the cliff decimation in front of The Red House



20.

May 2021, 2-meter-high cairn built on beach from coralline crag that washed up in winter storms - evidence of the fragility of the offshore reef that protects Thorpeness and Sizewell.



Conclusions

These photographs are just a very small selection of the hundreds I have taken that document coastal change on this coastline. They tell a story of continuous change, happening at unpredictable moments. They also illustrate the embayment that happens whenever a hard defence is put in place on an eroding coast. The huge hard and soft defences at Sizewell will have a significant effect on the coastline, north and south of their installation and could cause a considerable acceleration of erosion on this coast. Once erosion starts, it is hard - if not impossible - and expensive to stem.

This is absolutely no place for two more nuclear reactors. The legacy of climate change to our children is bad enough without also leaving a legacy of nuclear waste here which they may not have capacity to keep safe.

Disasters and change happen suddenly and unexpectedly. The Thorpeness sea defences are a very small example on Sizewell's doorstep of how we fail to plan ahead and fail to take timely action. Our entire coastline is littered with such accounts of our inability to hold back the sea in the long-term - or even, as in this case, for the relatively *short-term*.

To build on this scale *here* on perhaps Europe's fastest eroding coast demonstrates arrogance and hubris in the extreme - I urge you to think of the children.

Whatever one's views on nuclear power, this is absolutely no place for a project of this scale and the storage of nuclear waste for over a hundred years.

Experience shows that the Sizewell site will be impossible to defend - with its watery hinterland, and embayment caused by ever higher sea defences, leaving a terrible legacy to future generations who will reap no benefit at all, just billions in costs.

The applicant is exhibiting a reckless disregard for the safety and futures of local people. If this goes ahead not only will it disgorge thousands of tonnes carbon into the atmosphere, use valuable resources & finance and devastate biodiversity that our prime minister has promised to protect - it will also threaten the very future of this area. Our children and grandchildren stand to lose everything.

Frances Crowe
10/5/21

Appendices

See next page

Appendix I - Map of location



Key:

Solid red line = a key site of major cliff and sea defence erosion

Dotted line = walking access (shingle beach)

1 = access to beach - footpath at end of Old Homes Road

2 = site of major breach of sea defences