

**Issue Specific Hearing 11 (ISH11) on Flooding, Water and Coastal Processes
Theberton and Eastbridge Parish Council, Stop Sizewell C and Minsmere Levels
Stakeholders Group**

Oral Contribution by Cllr. Paul Collins

Please note the summary of my oral contribution is bulleted and in italics. Any text highlighted with bold and italic emphasis in the following submission represents additional information not conveyed in the oral submission along with three photographs that were referred to during the oral submission.

2. Water Supply

The Water Supply Strategy and the availability of both potable and **non-potable water** to meet the full demands of the Project with particular regard to the early years of construction.

- *We know that for non-potable supply a reservoir has been added to the plans.*
- *In the updated submission [REP7-036](#) regarding non-potable supply, foul water from both SZB and SZC plus utilisation of what will be redirection of an existing abstraction from the New Cut is proposed.*
- *The latter is currently used for irrigating farmland within the development area.*
- *Does the applicant consider this combination of sources to be sufficient to actually do what is quite a lot of dust suppression and various other water-based activities that don't require potable supply?*

3. Main Development Site Flood Risk Assessment (MDS FRA)

Outstanding issues with respect to the Applicant's assessment, in particular:

- (a) Coastal flood risk; and
- (b) Any other areas of outstanding concern for the MDS FRA.
 - *No comments on these issues*

4. Associated Development Site Flood Risk Assessments

Outstanding issues relating to the following:

- (a) Sizewell Link Road FRA; and
- (b) Other Associated Development Sites.
 - *No comments on these issues*

5. Outline Drainage Strategy [REP2-033]

Outstanding issues relating to the Outline Drainage Strategy with particular reference to:

- (a) Main Development Site, including Water Management Zones
- (b) Drainage strategies for Associated Development Sites
 - *No comments on these issues*

8. Coastal Processes Update

Coastal processes update to include the following:

- Modelling for SCDF through decommissioning to 2140
 - *No comments on this issue*
- Modelling relating to
 - the detailed design of the adapted HCDF
 - the SCDF design
- *I am going to talk about the positioning of the HCDF toe at the most south-eastern point of the SZC defence which appears to be positioned significantly seaward on the SZB hydraulic groyne or “salient” and the extent of the SZB salient and its effect on the overall defensibility of the Soft Coastal Defence Feature from the outset.*
- *The extensive reach of the SZB salient to the north has significant maintenance challenges for both the HCDF, the SCDF and the Coastal Processes Monitoring and Mitigation Plan (CPMMP) given the current 2035 date for cessation of SZB operation.*
- *Submissions in [APP-311](#) para 20.9.25 to 20.9.27 and 20.12.22 to 20.12.25 and [APP-312](#) p44 (p45 HTML document) state that.*

...the salient" has been stable since 2011...
- *However, in section 2.5 of [APP-312](#) and at section 7.5 it states.*

The present-day beach salient formed at the Sizewell B Outfall is likely to be maintained until the station ceases to operate, after which the beach is expected to ‘relax’, eroding locally until the salient has disappeared (as per the Sizewell A salient following cessation of operation...)
- *At Section 7.4.1 it goes on to state.*

The expected relaxation of the shoreline when Sizewell B enters its decommissioning phase (which was also observed when Sizewell A stopped operating), may also reduce erosion pressure immediately north of the HCDF, due to gross transport during SE events and trapping of some material to the immediate north of the HCDF
- *However, the remains of the salient at Sizewell A is still visible in Sizewell Bay having been protected by the Sizewell B salient against the predominant north-south longshore drift as shown in this photograph taken on 18th September 2021 and in the long-distance photographs of Sizewell Bay below (Figures 2 & 3).*

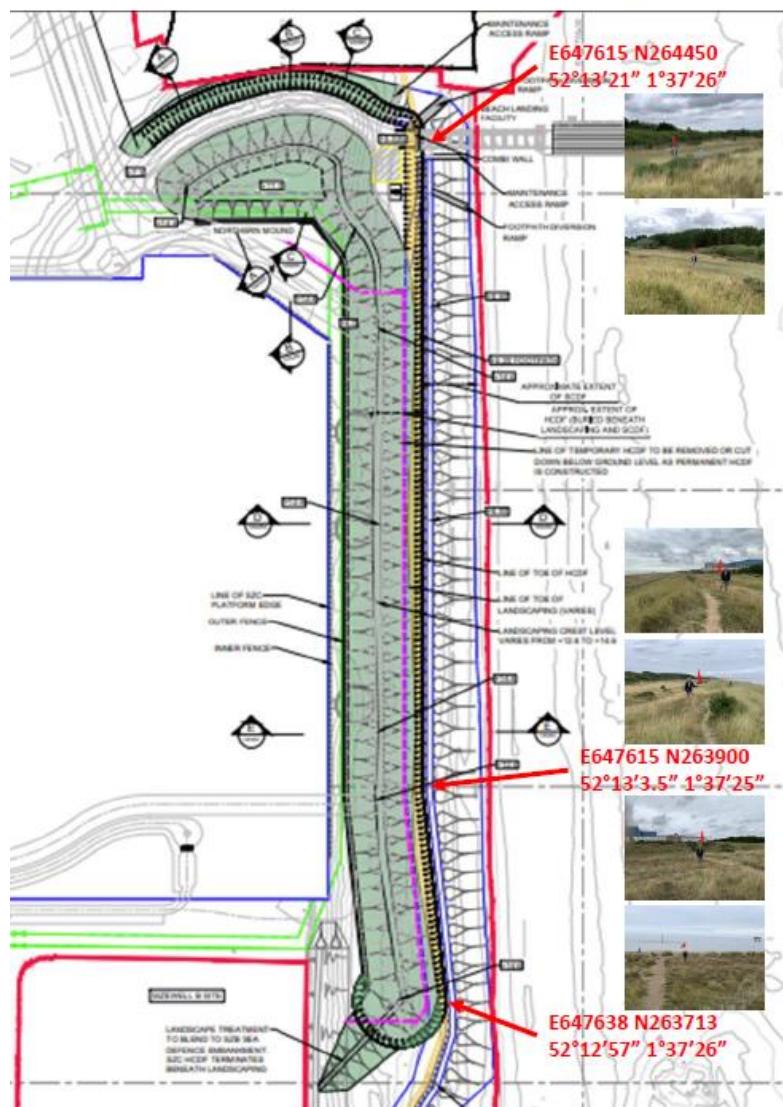


Figure 1: Sizewell A & B Salient apices and shingle bank

- So, this part statement seems to be without foundation and does not reflect the reality on the current shoreline. The final statements regarding trapping of materials north of the HCDF may no longer be supportable given the change in position, landward, of the permanent Beach Landing Facility.
- These last two early references are the only ones regarding the SZB salient and the expected behaviour following cessation of SZB operations. None are present in the two SCDF modelling documents in [REP2-115](#) or [REP7-045](#).
- On 20th August we traced the toe of the current proposed placement of the Hard Coastal Defence Feature toe using the Ordnance Survey references for three positions of the HCDF, as provided in [REP5-015](#). These positions are;
 - the permanent Beach Landing Facility
 - the most south-eastern point where the HCDF turns towards the SZB HCDF and
 - at a point approximately 150 metres north of that south-easterly point where there is an inflection point and the HCDF turns in a slightly more northerly direction towards the permanent BLF position referred to earlier.
- The OS grid references were converted into latitude and longitude using the [OS conversion page](#). We then walked to each of the three positions using the Apple iOS compass feature on an iPhone.
- We were taken by surprise when we made our way to the most south-eastern point as we found ourselves some 15-20 metres seaward of the current sacrificial dune on the vegetated shingle between a viewing platform, that sits on the top of the sacrificial dune, and directly in line with the SZB inlet and outfall positions (**just to the right of the SZB salient position shown in the photograph above**).

- The inflection point position ~150m north of this position is immediately on top of the existing sacrificial dune where a path has been created by regular walking use.
- The position of the permanent BLF sits immediately behind the sacrificial dune representing the changed positioning in the applicant's recent updated design in [REP5-015](#).
- These positions were not what we expected given the positions that were marked out during the Accompanied Site Inspection to the Hard and Soft Coastal Defence on June 8th. We now realise that those positions, being north of the inflection point, were only representative of the northern 2/3rds of the hard coastal defence feature.
- Pictures of all three of these points are given in [REP7-242](#) and [REP7-241](#) which were submitted as part of the oral summary for ISH-10 on Biodiversity and Ecology. In each of the pictures the person standing at the appropriate coordinates is holding a pole with a red flag at the top. The height of the flag roughly represents ground level at ~+5.4mAOD once the new SCDF has been built on top of the +1mAOD HCDF toe.

Edge of the HCDF and position of future footpath



- *Coincidentally, at the same time, we were sent a drone picture of Sizewell Bay taken from slightly south of the Minsmere Sluice and showing the entire sweep of the Bay all the way to the Ness just north of Thorpeness. The picture shows almost the entire 3km Zone of Influence that the applicant centres on the new SZC site. I will provide the picture in my summary of this session (**Figures 2 & 3 below**).*
- *What is striking about the picture is not the view of the proposed SZC site along with SZB and SZA beyond but that it clearly shows the two salient, **the first** created by SZA initially and then enhanced, extended and currently maintained by the current SZB outfall.*
- *In fact, the current SZB salient starts at the northern end of the proposed SZC site, close to where the permanent BLF is proposed, reaches a maximum eastward point opposite the SZB outfall, decreases slightly to the south before another minor maximum is reached where the old SZA outfall salient is still located before returning to the general sweep of embayment that stretches from Minsmere Sluice to the Ness at Thorpeness.*



Figure 2: Indicative natural embayment line for Sizewell Bay and SZC ZOI

- *Despite SZA having been shutdown since 2006, the hydraulic salient it created has been protected by operation of SZB creating its own salient during the 11 years when both stations were operating simultaneously. The fact that the SZA salient is still present also reflects the predominant north to south longshore sediment drift that is typical of this part of the coast.*



Figure 3: Embayed line for Sizewell Bay and Szc ZOI with BLF and SZA & SZB Salient

- So when SZB is shutdown permanently, the coast in front of Szc, SZB and Sza will erode back to the natural Sizewell Bay embayment profile based on the statements in [APP-311](#) and [APP-312](#) referred to above.
- SZB shutdown is currently scheduled to occur in 2035, roughly at the same time that we are told Szc, if consented and built on time, will begin operation.
- Of course, EDF Generation Co. have stated their intention to apply to the Office for Nuclear Regulation for an extension of operation for SZB beyond 2035, but the length of the extension, the conditions and potential enhancements that might be required, such as raising and reinforcing the current HCDF, which is not seismically competent, and/or other possible reactor safety enhancements to bring it up to post Fukushima standards may make such an extension financially challenging or, if not practical, perhaps limit the length of any extension.
- What is clear is that SZB will be shut down in the early part of Szc operation, even if not when the first reactor at Szc is brought online.
 - So, what will happen on the coast to the extensive Sza and SZB salient when SZB outfall no longer maintains them?
 - How long will it take for the SZB salient to “relax”, or erode, back to the natural Sizewell Bay embayment profile?
 - Where precisely is the south-eastern end of the Szc HCDF relative to the natural embayment profile of Sizewell Bay from Minsmere Sluice to the Ness at Thorpeness?
- The current plans of the HCDF overlayed onto the light grey contours of the underlying OS map in [REP5-015](#) (**and shown above**) do not give a clear indication of where the southern 150- 200m of the HCDF are compared to the current sacrificial dune, hydraulic salient of SZB or the natural embayment profile of Sizewell Bay.

- Despite knowing that the SZB salient will erode or “relax”, no attempt has been made to model this feature, its eventual erosion or timeline and then consider the impact this will have on the overall SCDF modelling.
- In terms of the time that erosion of the SZB salient is concerned, if we go back to the period between consultations 2 and 3 when there was a proposal for a substantial jetty to be built for the SZC development, the applicant shared with Suffolk Coast District Council, Coastal Partnership East, Minsmere Levels Stakeholders Group and Suffolk Coast Action for Resilience the modelled effects of the jetty on longshore drift and clearly showed the build-up of sediment beneath the structure during operation and once removed, that the natural longshore drift process removed the shingle groyne over a period of 3-4 years, returning the shoreline to its “natural” embayment profile (**with SZB operational**).
- Whilst it may take a longer time for the erosion of the **SZA and SZB** salient to take place, the loss of the SZB outfall maintaining force will mean that the erosion will be unstoppable and no amount of beach recharge from the CPMMP will be capable of stopping restoration of the natural embayed Sizewell Bay beach profile in front of SZA, SZB and SZC.
- SZA and SZB salient are referred to in the CPMMP Version 2 [REP5-059](#) in section 4 in the context of the 2 Fish Return Outfalls and the Combined Drainage Outfall planned for SZC. It states.

*The precautionary monitoring [**of the three outfalls**] is proposed because of analogous changes in the shoreline (accretion) and outer longshore bar (deflection) considered to be caused by the nearby Sizewell B (SZB) outfall..... Subsequent shoreline accretion inshore of the outfall could be due to changes in wave refraction around the altered bar. Although this evidence is inferred, a similar feature was observed opposite the SZA outfall (during operation only).*

- It goes on to say that the low flow rates that will be characteristic of these new outfalls would not be considered sufficient to create yet another salient in front of SZC.
- So, we now come to the Soft Coastal Defence. In [REP5-009](#) 5 cross sections of the HCDF are given, three profiling the new northern mound and two showing the profile of the eastward facing beach defences. In both cases the SCDF profile runs from the +6.4m AOD apex of the new sacrificial dune to the 2030 MHWS at ~+1.5m AOD. The most southerly of these two is north of the point where the HCDF toe crosses the existing sacrificial dune to the vegetated shingle that is part of the SZB hydraulic salient.
- No cross sections are given of the HCDF/SCDF profile south of the inflection point or at the maximum south-easterly point close to where the HCDF terminates and the interface to the existing SZB HCDF is proposed. This is where the SZB salient is at its most extensive and can be seen in the drone pictures of Sizewell Bay above (**Figures 2 & 3**).
- In fact, as I indicated earlier, the reach of the SZB salient goes all the way north to where the permanent BLF is proposed. This means that the position of MHWS along the whole length of the SZC coastal defence is further east than would be the case should the natural embayment profile be in place today or at some point in the future.
- So as soon as SZB is turned off and the salient sustaining outflows cease, the coast will begin returning to its natural embayment profile and the new SZC outfalls will not be capable of maintaining or creating a similar protective structure for SZC.

- This means that MHWS will begin to move back west towards the HCDF toe and the SCDF profile will start eroding and will not stop eroding until the natural embayment profile is reached or another hard point is encountered.
- The longshore drift process will simply be unstoppable and beach re-charge will be unable to stop this process. This means that the forward position of the HCDF toe, particularly at the southern end will potentially be in significant jeopardy from the day that SZB is finally shut down.
- It is notable that in the one dimensional modelling of the SCDF in [REP2-115](#) the HCDF crest is entirely straight and the inflection towards the east at OS coordinate N263900 E647615 is not reflected in the Lidar topography (Figures 6 & 7). In fact, neither is the full length of the of the HCDF and relevant beach topography which goes beyond the south-eastern toe of the defence at OS N263713. The figures referred to are cut off at around OS N263770.
- The position of the south-eastern tip of the HCDF compared to the natural embayment profile of the bay is also not available as no modelling is provided to show whether the HCDF toe at this point would be in an unsustainable position when the SZA and SZB salient succumbs to natural erosion from longshore drift and winter storm events as is inevitable.
- In section 2.2 of the report, it states.

Whilst the shoreline immediately to the south is relatively stable, the shoreline to the north is steadily retreating.
- However, as the whole of the shingle beach frontage across SZC and further south across both SZB and SZA are part of the salient being sustained by the SZB outfall, the stability of both the beach to the south and across the SZC frontage to the north cannot be relied upon once SZB stops operating as the sustaining force of the SZB salient.
- All the SCDF modelling relies on current beach profile data and does not look to the impact of future changes that operational cessation of SZB will impose on the beach front.
- In the X-Beach Modelling [REP7-045](#) Figure 3.7 shows four storm scenarios with the old BLF and once again an inaccurate south-eastern position of the HCDF toe. In fact, it looks like the toe is not positioned far enough south as you can see the SZB salient in the contours below the HCDF termination where the HCDF has its most south-easterly extent. Unfortunately, OS references are not given in this report, just arbitrary “Alongshore (m)” so we cannot cross-reference between these two SCDF modelling reports.
- I support Mr Bill Parker’s submission based on his review of this ISH 11 proceedings and in particular, so far as this submission is concerned, the choice within the X-Beach modelling to use the Beast from the East as an appropriate “storm” to model the SCDF against is inappropriate, given its mild wind and wave characteristics.
- So, the combined SCDF modelling in these two reports is inadequate as,
 - it does not represent the latest configuration of the HCDF
 - doesn't properly reflect the southern HCDF location or the new retracted position of the permanent BLF.
 - as they both ignore the impact of SZB cessation of operation by assuming that the beach to the south is "relatively stable" and

- *the impact that this event will have on the SZB salient across the entire SZC frontage to the north and south across both SZB and SZA.*
 - ***the storms chosen to model in X-Beach are inappropriate.***
- *Whilst changes in front of SZA and SZB are not the concern of this examination, impacts on SZC because of SZB operational changes are and need to be assessed. I'm sure the ONR will be interested in both sets of changes including how SZC HCDF and SCDF will impact SZA and SZB once they are both in decommissioning phase.*
- *Currently, these impacts are unknown as they are not properly modelled or considered.*
- *So, the idea that the CPMMP and beach recharge will be able to counter this natural process or that the adaptive HCDF will have something to adapt in 2095, is wishful thinking on a quite astonishing level and reflects that fact that out-of-date and inaccurate HCDF/SCDF definitions and positions are used in the modelling and no account of the impact of SZB's shutdown has been examined or modelled.*
- ***In my professional life I've worked with modellers and statisticians in industry for over 30 years and it is a simple truth that unless you provide accurate baseline conditions and data, any models and predictions that rely on those underpinnings will have no validity. Whilst there is undoubtedly merit in the method behind the modelling, the failure to represent the SZA and SZB salient currently in position and their medium-term demise means that the results are questionable, will not reflect likely behaviour and will not adequately represent the ability of the applicant to manage the eroding shoreline and impact on the SZC HCDF/SCDF into the future via the CPMMP triggers.***
- *So, we are still in a position of insufficient design, modelling and impact assessment having been done by the applicant.*
- *Given the strategic nature of the HCDF/SCDF, the total reliance on it to be maintainable for adaptation in ~2090 and until end of site protection ~2190, as required by the ONR, the current proposals simply are not robust enough to ensure protection for the 60 years that the site is operational, never mind protection of the decommissioning and decommissioned site close to the end of the next century.*
 - the provision of additional modelling, plans, sections, and information sought by IPs
 - *No comments on this issue*
 - the Minsmere Sluice Operation Technical Note
 - *No comments on this issue*
 - the monitoring, triggers, mitigation, and controls incorporated within the latest revisions of the draft DCO requirements
 - *No comments on this issue*
 - the DML and the CPMMP.
 - *No comments on this issue*

6. Water Monitoring and Response Strategy [AS-236]

Outstanding issues relating to the Water Monitoring and Response Strategy.

- *No comments on this issue*

7. Water Framework Directive Compliance Assessment

Outstanding concerns with respect to the Water Framework Directive Compliance Assessment.

- *No comments on this issue*