Thorpeness Monthly Monitoring

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Date & Time of Survey: February 16th 2021 8:10 AM

Time of Low Tide: 07:45 **Height of Low Tide (m ODN):** -1.1

Current & antecedent conditions: SE wind F4 with obliquely arriving SE swell waves instigating some south-north longshore transport. Last weekend was similar, with fresh 25mph easterlies moving south-south-east on Sunday evening. Southerly winds including an onshore component. Seawater levels were high due to spring tides and positive surge (followed by a negative surge). Prior to this the week was dominated by the snow which delayed inspections. The snowfall started with strong winds creating blizzard conditions. Prior to this there was a spell of strong easterly winds of 50mph and this is what instigated the damage seen at Thorpeness today.

Geomorphological change over Southern UNDEFENDED frontage: Foreshore has lowered and widened under destructive wave conditions. Material has been pushed into one storm berm, as is often the case, but the smaller high-water berms are missing. There is a scarcity of sand over the intertidal zone indicating that all finer material has been (temporarily) transported offshore. Nearshore (sub-tidal) sand/gravel bars are evident through breaking waves and this indicates that some of the beach material lost from the intertidal beach remains close and well within the normal wave base.

Images of the southern UNDEFENDED frontage:

Left: This laterally continuous storm berm extends from Aldeburgh to in front of the Headlands properties. It ranges from 5 to 10ft high. The seaward face of the berm has variable gradient 45° to near vertical in places e.g., in the pocket adjacent to the southern end of the gabions.

Below: Note displaced geotextile bag debris in front of the country club and further south (also found on Aldeburgh village frontage).

Many pieces of Coralline Crag can be found on the foreshore which is another diagnostic of the recent high-energy wave event.

Below: The storm berm in front of the Headlands and the wide low gradient foreshore (30mins after low tide).

Above: Loss of intertidal beach material and existing gravel berms over southern frontage.

Geomorphological change over Northern DEFENDED frontage: Much lower, flattened foreshore than previous inspection and much steeper, higher storm berm completely filling the 'pocket' between the North End Avenue gardens and the southern end of the gabions. Evident loss of sand. Bags exposed. Smaller gravel size than southern frontage.

Images of the northern DEFENDED frontage:

Left: Continuous berm is constrained by beach front properties. Phase 1 geobags emerging but remain in situ.

Left: Note height and steepness of berm and exposure of Phase 1 geobags.

Left: Phase 1 geobags revealed adjacent to gabions, debris accumulation and uncovering of concrete sign base evidence loss of gravel from this area.

Gravel more consolidated and interbedded with sand. Geobags remain in situ and the line of defence, adjoining the gabions, seems to have worked well.

Gabion condition: Very Poor: Severe defects resulting in complete performance failure over the northern frontage.

Below: Gabions are intact over the southern frontage but show weakening and loss of integrity. The gabions are failing from north to south.

Below: Gabions at the northern end are so crumpled by wave action that their previous structure is unrecognizable.

Images of Phase 1 Geobags:

Phase 1 Geobag condition: Fair: Defects that could reduce performance of asset. Some exposed or partially exposed but they remain in formation still partially buried by storm berm.

Phase 2 Geobag condition: Very Poor: Severe defects resulting in complete performance failure. More displacement, loss of fill, holes in bags. Remedial action required to gather any straggling geotextile from shoreface.

Images of Phase 2 Geobags:

Comments on Phase 2 Geobags: The geobags have maintained a level of protection throughout this destructive event and absorbed a great deal of wave energy. Much green geotextile is exposed indicating a great deal of displaced bags - due to the mobility of this underlying fabric. Around the terminal defence feature some geobags are still stacked and whole but most show holes and loss of fill. Many stray bags on the shoreface far from their source.

Signage condition: Fair: Defects that could reduce performance of asset.

Comments on signage: Where signs are still present their condition is good and they function well (south end). In other locations (north end) the signage is completely destroyed. The concrete base of the sign on a post is uncovered at the south gabions (see photo below). One recently installed sign on post near to the cliff toe, north of the defences, is missing.

Images of signs:

Hazards: Hazards include geotextile debris partially buried in shoreface as far south as Aldeburgh village. More wooden stumps at base of gabions are exposed - trip hazard at high tide (despite the fact that hazard warning signage advises the public that this area is closed). There are sharps on the gabion mesh and the deformation of the gabions means that all private access steps from north end avenue gardens are unsafe and impractical to use for beach access. The major hazard is currently the Red House's unstable garden wall, now hanging on to the sandy cliff edge with a sheer drop below. The cliffs to the north of the defences are all actively eroding. The beach has formed an embayment and the width is narrow in the center of this embayment - potentially squeezing walkers towards the cliffs. Fishing nets and line make up some of the detritus on shoreface. Other hazards like the large piece of timber seen below also prevent a hazard to navigation, if allowed to refloat.

Images of hazard:

Geomorphological change north of defense termination:

Cliff top and cliff toe recession. The erosion of the cliffs has persisted and accelerated. Outflanking of the terminal defence feature has caused a few meters of recession into the Red House's garden. New structures now appear on the cliff edge and the house itself is visible from the beach. The strong easterly winds and waves yeilded some aggressive erosion of the cliffs directly below the Red House. The frontage within 200m north of this area has been the focus of erosion and suffered the greatest losses of material. The cliffs are near vertical and an enclave in the beach has formed. Beach levels to the north of the defences are not particularly low due to this addition of sediment from the cliffs. A large and prominent embayment between the Red House and the Ness has emerged and beach width is very narrow in the middle of the now concave shoreline. Beach cliffing has occurred to the north of this section but where the beach width eventually widens, towards the Ness, the large gravel storm berm reappears. The berm is not as high or steep here as it is over the southern village frontage. There is no evidence of wave run-up reaching the sandy dune foot.

Inspection Follow-up: Continue to monitor Thorpeness frontage closely and frequently. Share report and photos with ESC team and Thorpeness community to facilitate decision making on actions to take. Recommend signage is reinstalled to deter beach visitors unfamiliar with the area. Gabion mesh has some sharps and wooden stumps at base are trip hazard – to consider as part of a much larger tidy-up operation. Check sustainability of existing sigs and replace missing signs. Right: see concrete base emerging due to lowering of foreshore. Southerly waves at present could bring *some* remedial benefits to the shoreface.