

Pevensy Bay – Silt Accumulations and Algal Blooms

Natural Processes

The tidal strip of the Sussex coast is laden with silt all year round. As shown opposite in an aerial photo from 1st July 2000, brown sediment can be seen in suspension, roughly out to the line of low water, with clearer blue water beyond. Through much of the year wave action keeps this sediment in suspension. During calm weather, however, it starts to sink and begins to settle in hollows in the sand terrace below the main sea defence embankment. The longer the period of calm weather, the thicker the layer of silt that forms. In summer it can develop to be up to 0.5m thick. Sand on the beach itself moves all the time, so the hollows where silt collect are not always in the same place. Any silt that builds-up is quickly dispersed back into suspension as soon as wave activity returns. Although it is generally a summer phenomenon, it can form at any time of the year when sea conditions allow. It is not specific to Pevensy and occurs in other places along the coast.



When it forms in spring, it is often accompanied by May Rot/Bloom. A bloom occurs when microscopic plants called phytoplanktons multiply as sea water begins to warm using nutrients that have accumulated during the winter. They are non-toxic but can be mistaken for sewage pollution, often forming a brown, frothy scum. When left on the shore it breaks down into an unpleasant brown slime that smells like sewage. This soon breaks down and disappears in a few days.

Silt has been behaving in this way, and algal blooms coming and going, for centuries. They are not as a result of Sovereign Harbour's construction in 1993.

Sovereign Harbour

As a non-natural harbour, Sovereign Harbour has to be dredged every year to allow vessel access at all states of the tide. Two distinct types of material are removed from the marina.

- Everything between the breakwaters, and in as far as the lock gates, is silt. This is removed and taken 2.5km due south where it is dumped in 20m of water in a site licensed by the Marine Management Organisation, part of Defra.
- Approaches to the marina, outside the breakwaters, pass through sand bars that migrate into the approaches due to wave action during the year. Clean sand is removed, and, rather than dumped at sea, is deposited in a separate licensed area 1km east of the marina, near 'The Sandcastle', always below the lowest low water spring tide level.

Sand is treated differently because it is important to the sea defences as a whole. Without sand, pure shingle will not form a sea defence, as water would easily pass through it. Monthly beach surveys over the last 20 years suggest that sand is gradually being lost from the sand terrace. Over time this will make the defences increasingly difficult to manage, as the beach steepens, and waves deliver more energy to the beach. Since the harbour was built it is estimated that more than 500,000m³ of sand has been removed and lost from the intertidal zone. By trying to keep this sand inshore, it is hoped to slow or reverse losses that have been occurring.

Water quality

Bathing water quality is monitored by the Environment Agency. The location chosen to represent Pevensy Bay is adjacent to 'The Sandcastle' (BN24 6JG) so only 300m from where the sand is placed. Water quality has consistently been rated as good since 2016. Any minor variations from normal readings tend to occur in July and August during school holidays rather than when sand from Sovereign Harbour is introduced. Records for Pevensy Bay and other sites can be found at <https://environment.data.gov.uk/bwq/profiles/>