Landforms of coastal deposition: Hurst Spit

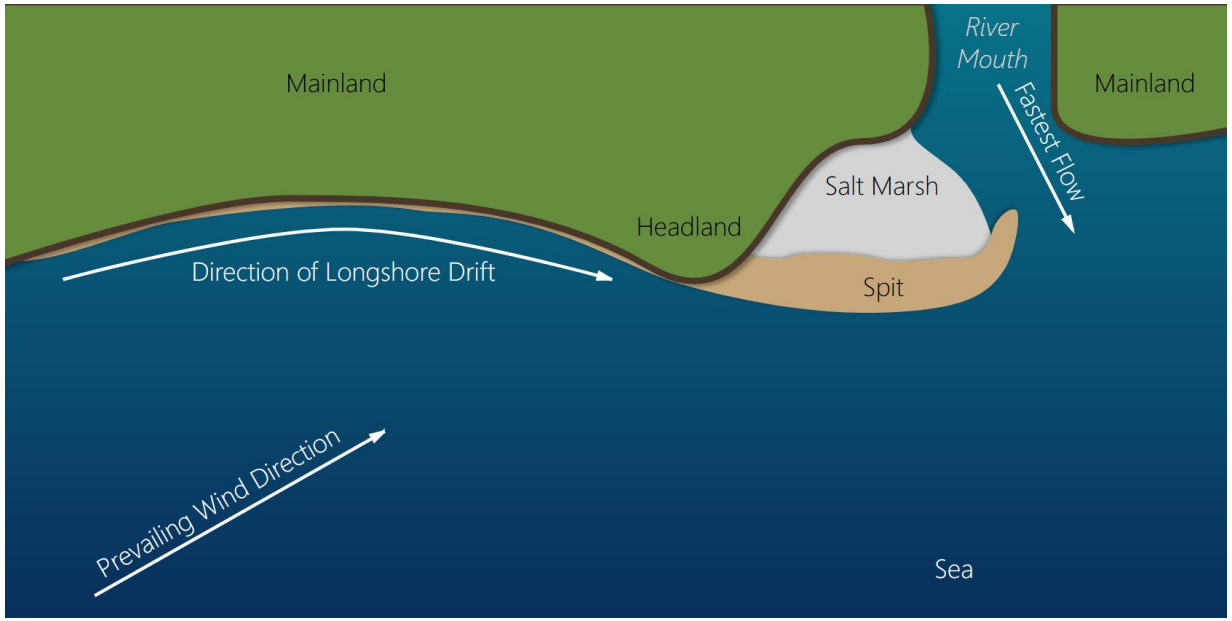


Five key terms

- **Spit** - a long, narrow finger of shingle or sand that extends out from the coastline into the sea.
- **Recurved tip** – a hook-like feature formed by wave action at the tip of a spit.
- **Longshore drift** – the movement of sediment along a beach.
- **Mudflat** – coastal wetland formed by the deposition of mud and exposed at low tide.
- **Saltmarsh** – an area of coastal mudflats covered by salt-tolerant vegetation (mostly grasses) which is flooded at high tide.

What is a spit?

- A spit is a long, narrow finger of shingle or sand that extends out from the coastline into the sea.
- Spits commonly form where the shape of the coastline changes.
- Sediment, transported along the coast by longshore drift, is deposited and extends out into the sea.
- A change in wave direction can cause the tip of the spit to curve.



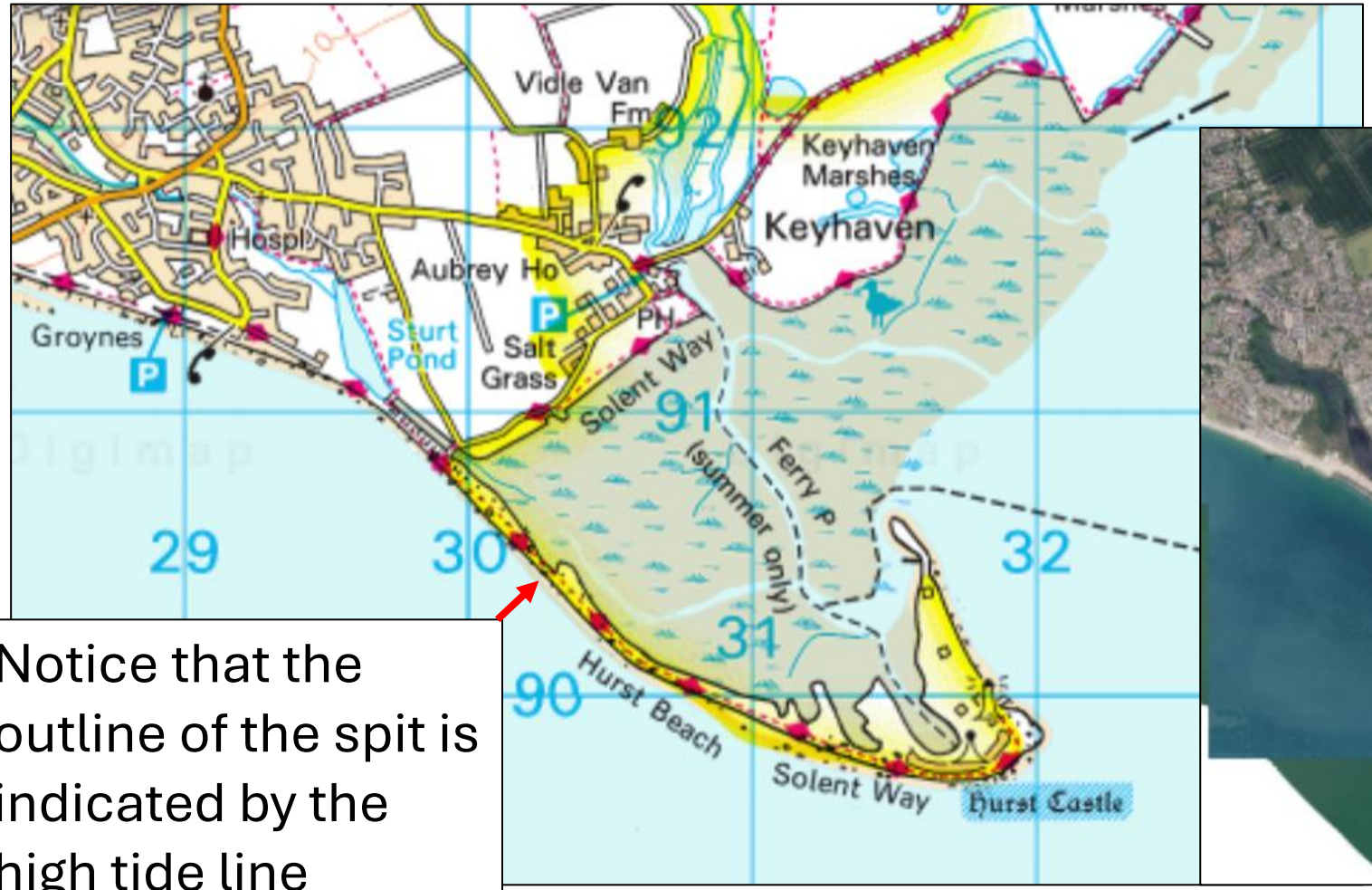
Location of Hurst Spit

Hurst Spit is located on the south coast of England, south of Lymington





Hurst Spit: OS 1:50,000 map and aerial photograph

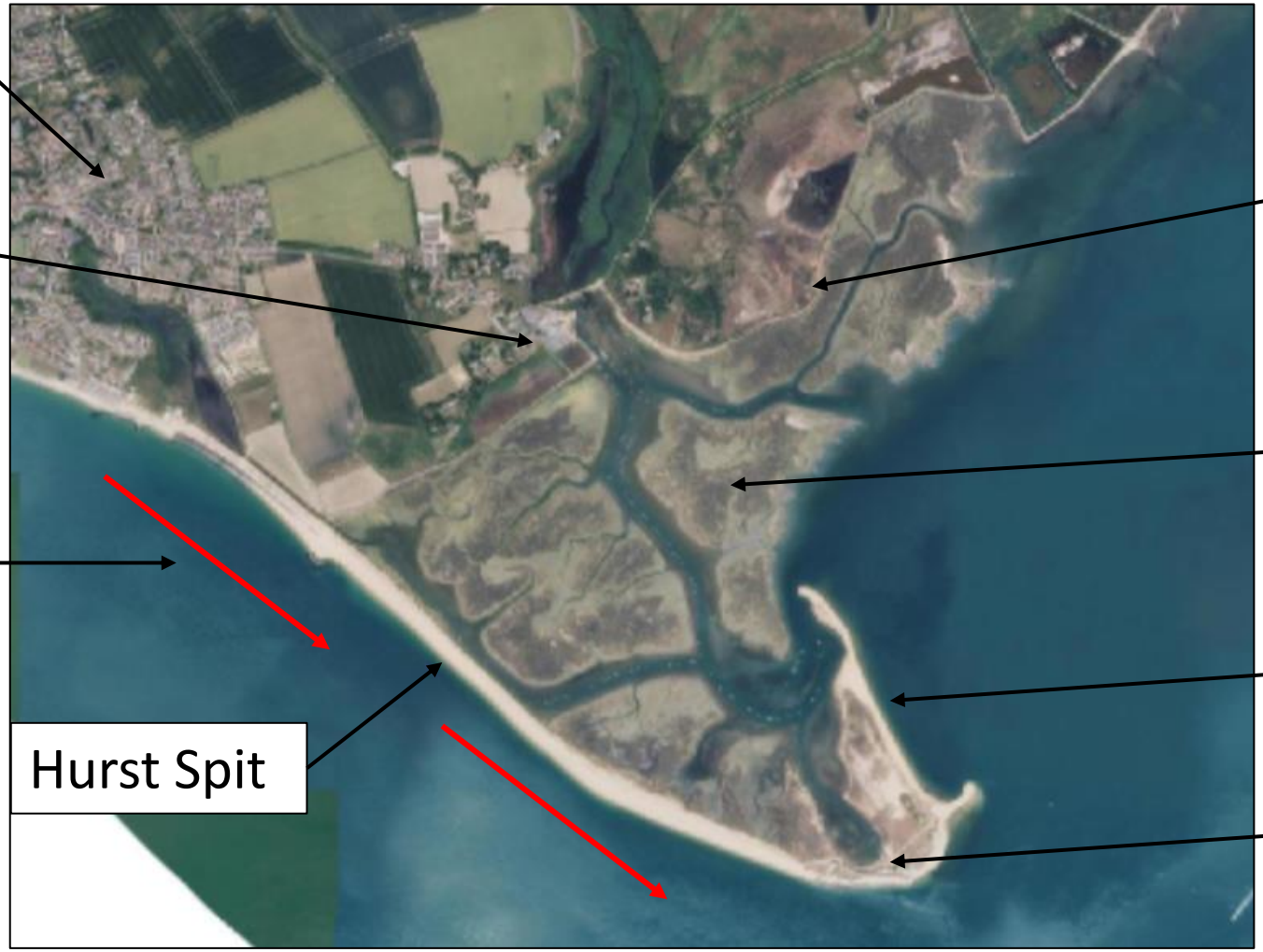




Notice that the outline of the spit is indicated by the high tide line

1 km

Hurst Spit: landforms of coastal deposition



Hurst Spit

- Hurst Spit is a classic hook-shaped coastal shingle spit, extending for 2.25km from the coast at Milford-on-Sea, Hampshire.
- It is mostly about 50m wide.
- Since the 1940s, the spit has declined in volume as coastal works at Christchurch have interrupted sediment flow from the west.
- At the tip of the spit is Hurst Castle, a coastal fortress constructed by Henry VIII in 1544.





Formation of Hurst Spit

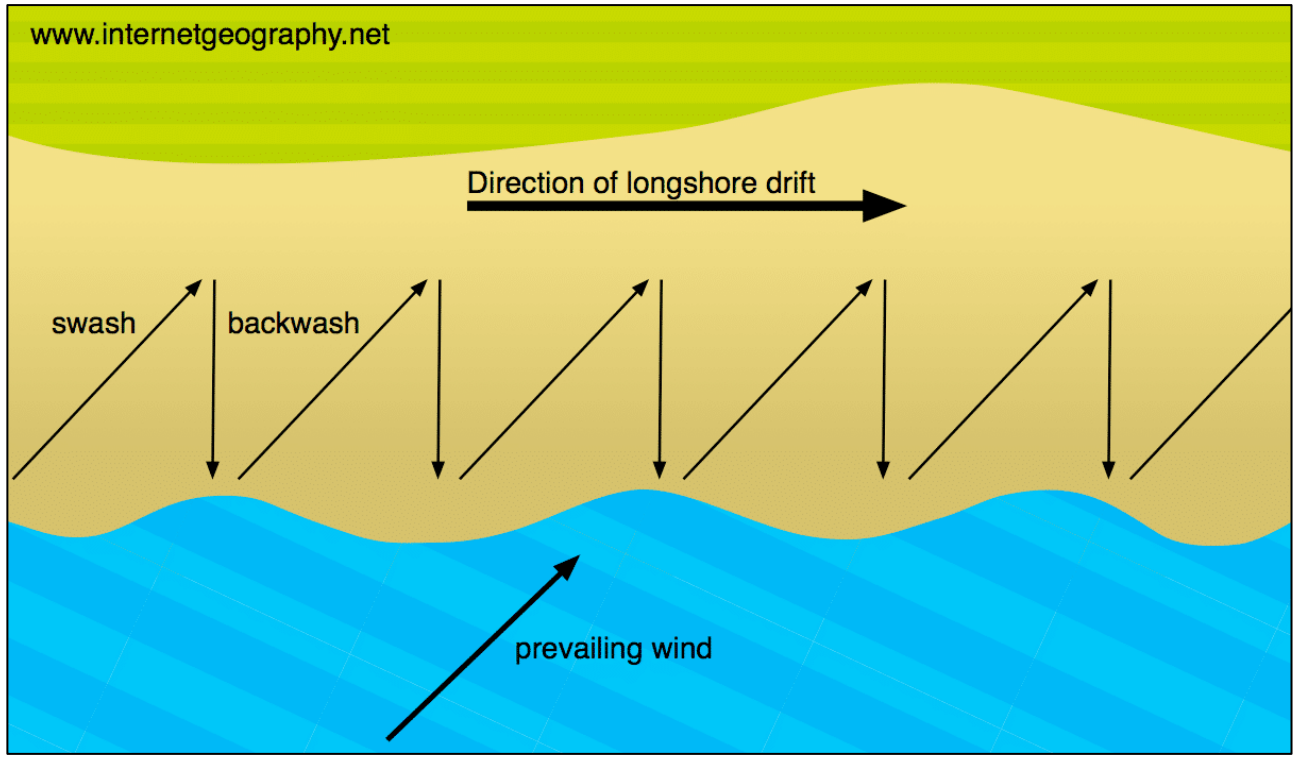
- Hurst Spit has been formed by the process of longshore drift, transporting shingle eastwards from the cliffs in Christchurch Bay.
- Since the 1930s, much of the bay has been built up with the growth of Barton-on-Sea and Milford-on-Sea.
- Coastal defences protecting these towns have reduced cliff erosion in Christchurch Bay, starving the spit of fresh coarse sediment.
- Whilst naturally formed, Hurst Spit is now a managed and artificially maintained defence.



Longshore drift

- In the UK, the prevailing (dominant) wind direction is from the south-west.
- Waves breaking at an angle to the beach, push sediment up the beach as **swash.**
- As each wave recedes, sediment is pulled back towards the sea (**backwash**).

- Over time, this zig-zag movement transports material along the beach - this is **longshore drift**.



Hurst Spit: recurved tips

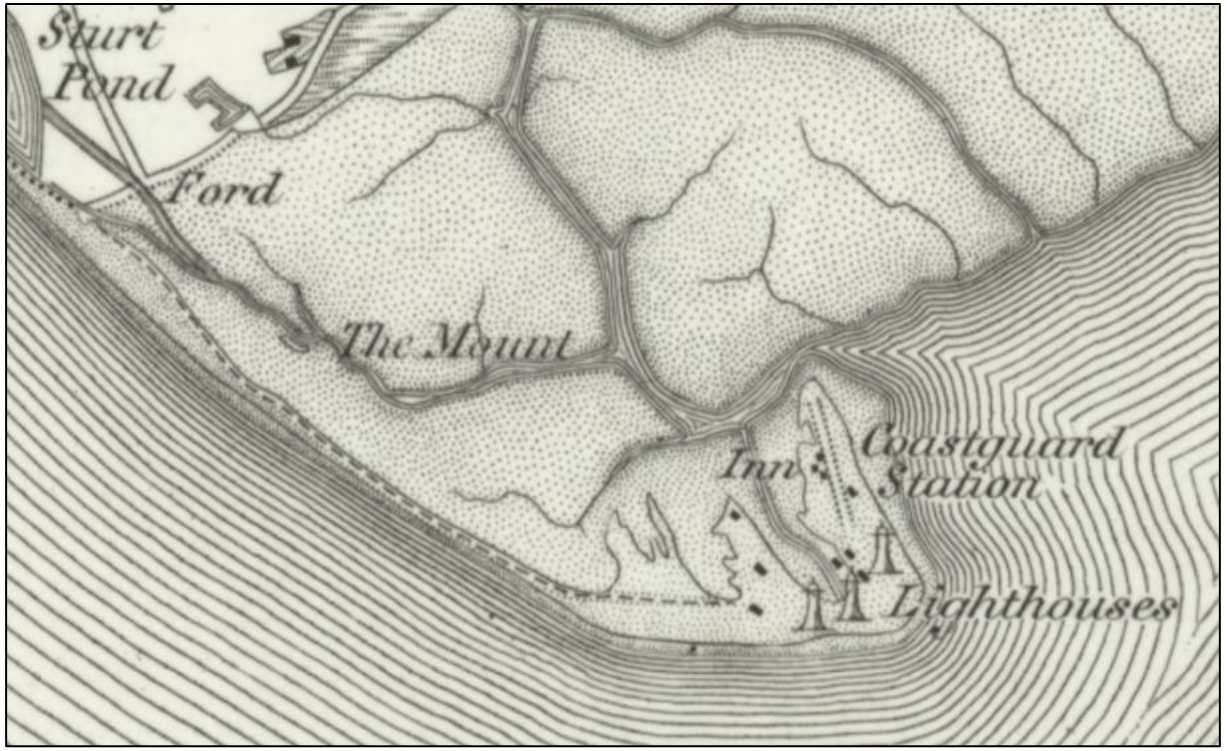
- At the far end of Hurst Spit is a distinct recurved tip.
- The hook-like landform is formed when waves and currents re-shape the tip of the spit curving it back towards the coast.
- At Hurst Spit, it is possible to identify historic recurved tips formed in the past as the spit has grown.



Spot the difference!

1 km

1890s



Present day



Look at the difference in the shape and size of the recurved tips.

Coastal deposition: Keyhaven

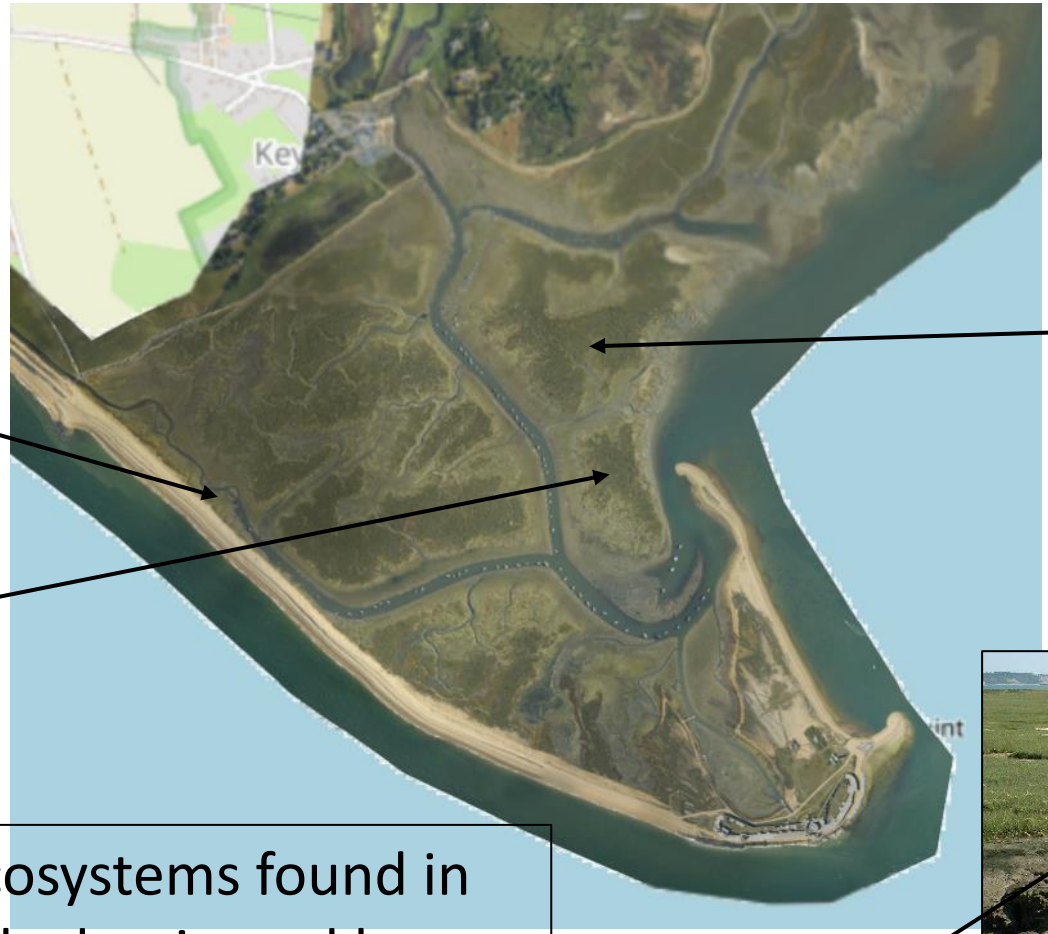
- The map shows a huge area of coastal deposition where extensive mudflats and saltmarshes have formed.
- The area to the north of the spit is sheltered from the waves, allowing suspended sediment to settle out to form mudflats and saltmarshes.
- Sediment carried along the Solent is deposited in these calmer waters to form mudflats which develop into saltmarsh.



Keyhaven mudflats and saltmarsh at low tide

Here is the spit, clearly indicated by the reflective nature of the pebbles

The darker brown areas are the mudflats, exposed only at low tide



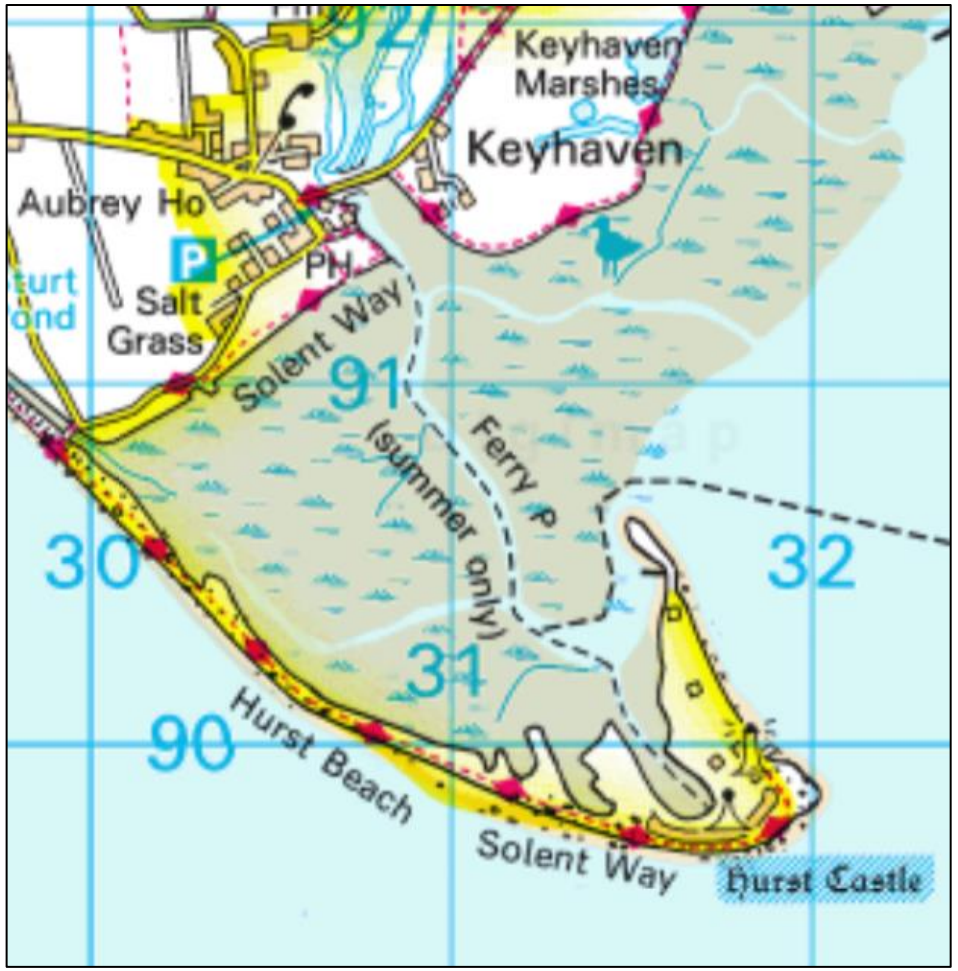
The dark green areas are vegetated. This is saltmarsh, forming on slightly higher ground and largely above sea level.



Saltmarshes are coastal ecosystems found in the intertidal zone, typically dominated by salt-tolerant plants, such as grasses and herbs

Mudflats and saltmarsh at Keyhaven





1 km

Quick Quiz!

1. Define a spit.
2. A spit is indicated on an OS map by the high tide line. True or false?
3. How long is Hurst Spit? Is it (a) 25m, (b) 2.5km, or (c) 25km?
4. What historic building was constructed at the tip of the spit during the reign of Henry VIII?
5. What process of sediment transportation is responsible for forming the spit?
6. What is the difference between swash and backwash?
7. A mudflat is exposed only at low tide. True or false?
8. On an aerial photo, what colour suggests a saltmarsh?

Answers

1. A long, narrow finger of land jutting out from the coast into the sea
2. True
3. 2.5km
4. Hurst Castle
5. Longshore drift
6. Swash is the movement of sediment up a beach when a wave breaks. Backwash is the movement of sediment back towards the sea as a wave recedes.
7. True
8. Green