GCSE Case Study Student Worksheet

Coastal landforms of erosion and deposition: Trevose Head, Cornwall

Where is Trevose Head?

1. Using the maps below, describe the location of Trevose Head.

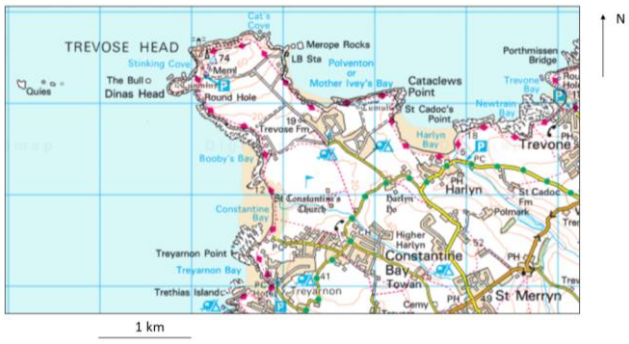


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Landforms of erosion and deposition

2. Using located arrows, label the coastal landforms of erosion and deposition at Trevose Head.



Landforms of coastal erosion

The aerial photo below shows Trevose Head.

3. Use arrows to locate labels on the photo identifying landforms of coastal erosion, such as headland, cliffs, caves and blowhole.



4. Explain how geology is affecting the coastal landforms at Trevose Head.

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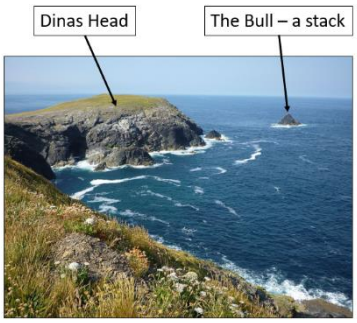
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5. The photo below shows Dinas Head, at the southern end of Trevose Head. The Bull is an example of a stack. Using a series of labelled diagrams, describe the likely formation of The Bull.

_____

_____

_____



6. Harlyn Bay is located on the northern side of Trevose Head. The map below is an enlarged 1:25,000 OS map extract of Harlyn Bay.





(a) In what direction is the photo looking? _____

(b) Identify the name of the headland at X. _____

(c) The photo was taken at low tide. True or false? _____

(d) Using arrows, label a wave cut platform on the map **AND** on the photo.

(e) Explain why wave cut platforms have formed at the headlands.

_____

_____

Constructive and destructive waves

It is possible to identify two types of wave:

- Constructive waves are generated by storms far out to sea. They are usually well spaced apart (long wavelength) enabling them to surge onshore uninhibited by the backwash of the previous wave. This results in extensive deposition. Constructive waves are typically associated with gentle beach profiles and sandy beaches.
- Destructive waves are generated by local storms. The waves are higher and have shorter wavelengths, often more chaotic as they approach the shore. Much of the wave energy is expended when the waves crash down onto the beach and the powerful backwash results in erosion of beach sediment. Destructive waves are usually associated with steeper beach profiles and coarser sediment (shingle).

7. Look at the photo below. What is the evidence that these are constructive waves?

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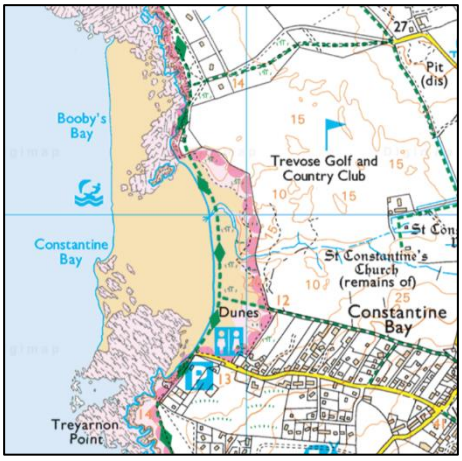


Landforms of coastal deposition

There are many examples of beaches and sand dunes along the Cornish coast.

Constantine Bay

8. Constantine Bay is located just south of Trevose Head. The extensive beach has formed in the calmer, sheltered waters between two headlands. The map alongside is an enlarged 1:25,000 OS map extract.



(a) What is the name of the headland at the southern end of Constantine Bay? _____

(b) Is the beach made of sand or shingle? _____

(c) Describe the location of the sand dunes.

_____

_____

9. The photo below shows the beach at Constantine Bay.



(a) In the photo, are the waves constructive or destructive? _____

(b) Explain your answer to Question 9a.

_____

_____

(c) What is the evidence that the tide is retreating? _____

(d) On the photo, use an arrow to locate and label the sand dunes.

(e) In the box below, draw an annotated diagram to explain the formation of sand dunes.

Treyarnon Bay

Treyarnon Bay is located to the south of Constantine Bay. A small beach has formed at the head of this narrow, sheltered bay.



10. The map shows Treyarnon Bay.
    (a) What is the name of the rocky outcrop at the southern end of Treyarnon Bay? _____
    (b) Compare the beach at high tide with that exposed at low tide. _____
    _____
    (c) On the map, draw a ring around the sand dunes.
    (d) Explain why the sand dunes have formed inland of the beach.

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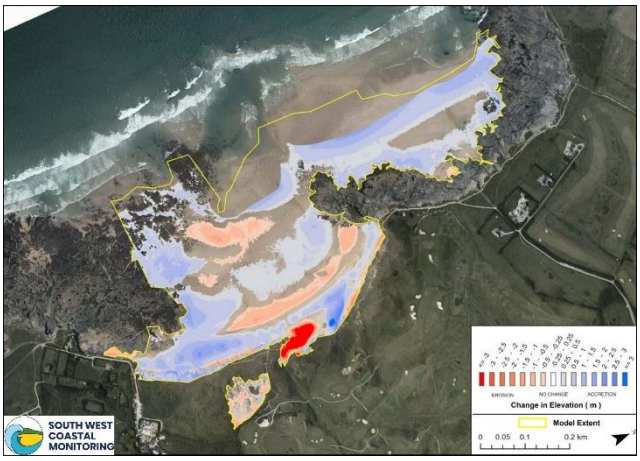
Extension Activity

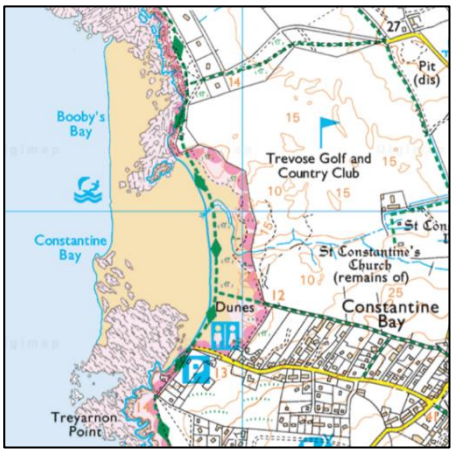
The aerial photo below shows Constantine Bay. Locate the North arrow and notice that the photo has been slightly rotated. This explains why the orientation of the coast is different from the map alongside.

Detailed beach surveys between 2008 and 2022 have enabled scientists at South West Coastal Monitoring (Plymouth University) to create this image showing deposition/accretion (shown blue) and erosion (shown red) during this period.

Look at the key. Notice that the colours show changes in beach elevation (height). The darker the colour, the greater the change in elevation in the period 2008-2022.

1. What is the evidence that, during the period 2008-2022, the beach at Constantine Bay has generally increased in its elevation?





2. Using the map, attempt to draw the high tide line on the aerial photo.
3. What is the evidence that the zone of greatest increase in elevation is the upper beach, above high tide?

4. Can you suggest why there is a narrow zone of erosion along the lower edge of the high tide line?

5. Using the map extract, suggest why there is a small area of dark red indicating erosion about halfway across the bay.