

## Spit Spotter!

### Calshot Spit and its development

#### Student Introduction

- ▶ This activity is a study into the formation and characteristics of Calshot Spit.
- ▶ When you take your ferry trip you will be able to observe this fascinating area first-hand.



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### Introduction

The coast is a **dynamic** system, this means that it is constantly changing. The shape of the coastline of the British Isles has changed continuously over the last few thousand years. For example, rising sea levels at the end of the last Ice Age cut through a whole ridge of land that once existed on the south coast and 'cut off' the Isle of Wight!

Sea level changes cause changes to our coastlines in the long term. In this study, we are more interested in changes that occur in the short term, and these are caused by **tides, waves** and **longshore drift**.



### All adrift! What IS Longshore Drift?

Working with a partner, summarise below what you think the term 'longshore drift' means.

*Try to use the words in the box!*

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Movement	Sediment	Zig-zag	Waves	Angle
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### How did you do?

Longshore drift is the **movement** of **sediment** along the coast in a **zig-zag** pattern, by **waves** approaching the beach at an **angle**.

### Now, in more detail...

Sediment is basically bashed-up fragments of rocks; it can vary in size from tiny sand grains to large pebbles and even boulders. It takes lots of energy to move the largest material, but the smaller material is being constantly moved along the coast by the waves.

In some places, waves approach the coast 'head-on' and sediment will simply be moved up and down the beach. However, in other places, waves approach the coast at an angle and the swash carries material up the beach in this direction. The backwash then carries material back down at right angles, under the influence of gravity. This continues along the coast, resulting in a zig-zag pattern of movement which gradually moves sediment along the coastline.

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Swash carries material up the beach at an angle.

The process continues along the coast.

Material is carried along the coast in a zig-zag pattern.

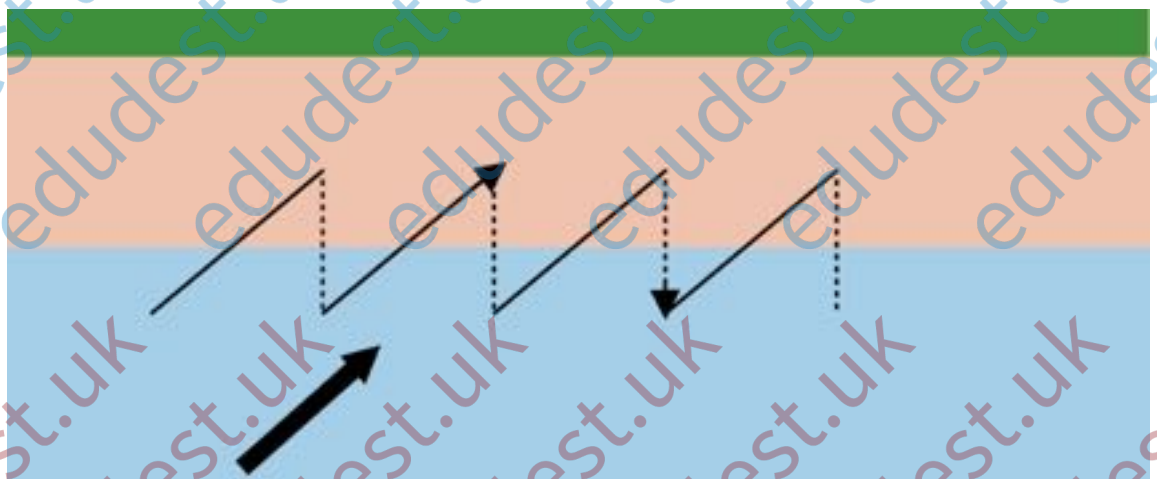
The backwash carries material back down the beach at right angles.

Waves approach the beach at an angle - a similar direction to that of the prevailing wind.

The next swash carries the material up the beach at an angle, and the next backwash carries it back down again at right angles.

Now, using the sentences above, annotate the diagram below to describe and explain the process of longshore drift. Use the following terms:

- Land
- Beach
- Sea
- Shoreline
- Prevailing wind
- Swash
- Backwash
- Sediment movement
- Direction of longshore drift





## Deposition

Some features, such as beaches, bars, tombolos and spits, are formed when sediment is deposited along the coast. You are going to be studying Calshot Spit, and you will see it when you are on board the Red Funnel ferry to/from the Isle of Wight.

Deposition is the 'dumping' of sediment that has previously been transported by the water. But why does deposition occur?



A beach along the eastern shore of Southampton Water

### Task - True or False?

Look at the following statements. Think carefully about each one, and decide whether you think that it is true or false. You should also try to explain why you think it is true or false, being as geographical as you can!

You can discuss your ideas with a partner, or as a small group. Your teacher will go through it with you at the end of the lesson.

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Deposition occurs where waves have high energy		
Deposition occurs where waves have low energy		
Deposition occurs in exposed areas of coast, e.g. headlands		
Deposition occurs in sheltered areas of coast, e.g. bays		
Deposition may occur where there is a change in the direction of the coast		
Deposition may occur where a river estuary meets the sea		

## ON THE FERRY

Back at school you learned about two key coastal processes - longshore drift and deposition. You know that material is carried along the coast and that, if conditions are right, it will be deposited to create certain landforms.

*Congratulations - you are half way towards knowing all you need to know about spits, and soon you will be seeing one!*

Calshot Spit lies at the entrance to Southampton Water. It is a 1 mile long sand and shingle bank. You will pass it roughly half way into your ferry crossing. When you pass it, you are going to draw a field sketch of it, and add labels to show its main features.

Before that though, there's a bit of time to learn about what a spit actually is, and how it forms.

A spit is a long and relatively narrow 'finger' of land which juts out into the sea. The diagram below shows what a spit is and how it forms. It is formed by longshore drift and deposition. It is formed due to the change in direction of the coast (which caused waves to lose energy).

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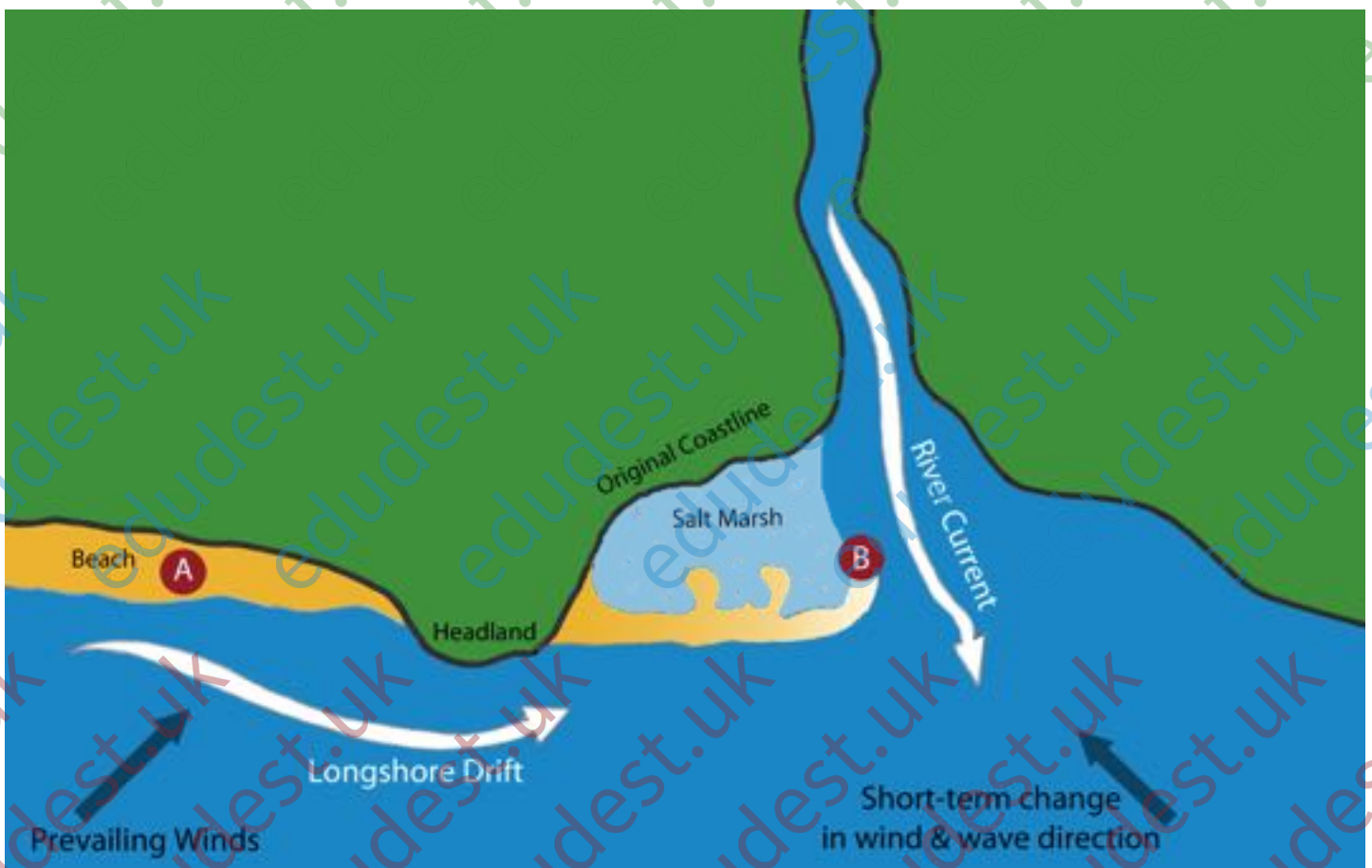
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has built up it will break the surface and form a spit. Longshore drift will colonise it and humans may even cultivate it or build on it.

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Occasionally a spit will grow all the way across to form a bar, but more often than not, its growth is 'arrested' by the opposing current and/or wind direction so it develops a curved end. The area behind the spit becomes sheltered, so more deposition occurs and a salt marsh may develop.



## TASK - Story of a Spit!

Based on everything that you have learned so far about longshore drift, deposition, what a spit it and how they form, you are now going to write your own 'spit story'.

The 'main character' in your story is a tiny grain of sand which, at the start of the story, is at point A on the previous diagram and ends up at point B by the end.

Some hints to get you thinking...

- Give your 'character' a name!
- Introduce other characters e.g. the headland, river or other grains of sediment
- You could draw a series of pictures or make it into a cartoon strip if you wanted to
- Be really imaginative, but get the geography across too!

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### Task - Sketching Calshot

As you pass Calshot Spit, you are going to draw a field sketch it in the frame below. You should then label the key features (physical and human) and annotate it to explain how it developed here, and why it is this shape. As you'll only have a good view for a few minutes, you might want to take some pictures!

107252

As you pass Calshot Spit, you are going to draw a field sketch it in the frame below. You should then label the key features (physical and human) and annotate it to explain how it developed here, and why it is this shape. As you'll only have a good view for a few minutes, you might want to take some pictures!

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## Extension: Humans on the Spit

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The following photographs are labelled to show how humans are using Calshot Spit:

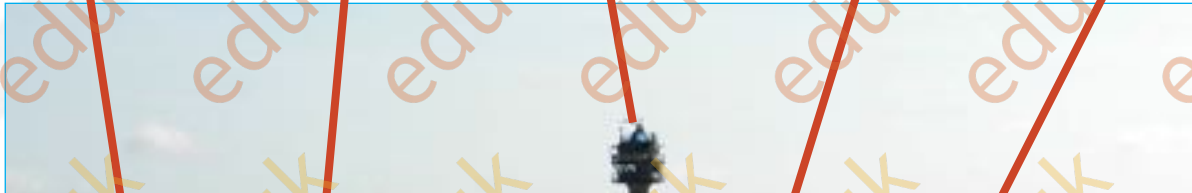
Calshot Activities  
Centre (ex RAF hangar)

Coastguard  
Radar Station

Activities Centre  
Swimming Pool

Calshot Castle

RNLI



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Car Parks and  
Beach Huts

Accommodation for  
Activities Centre

Tarmac road runs length of  
spit behind buildings

Car Parks and  
Camping

In what ways, either positive or negative, do you think that human activities are affecting the spit?

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## Post-Visit Activity: Presenting Calshot

You have already learned a great deal about spits: what they are, how they form and what Calshot Spit is like.

You are now going to use the New Forest Coastal Management Plan to find out more about the spit, its importance, issues being faced, and how it is being managed.

- » Visit the following website [www.edudest.uk/followup](http://www.edudest.uk/followup) and type this document's number, **10725**.
- » There you will find a link to the *New Forest Coastal Management Plan* for your reference.

You will combine all of your accrued knowledge to produce a presentation which should cover the following:

1. A general introduction to spits; what they are and the physical processes that lead to their development.
2. A specific introduction to Calshot Spit: its location, and why/how it formed there.
3. The spit's physical characteristics, its importance and its management.
4. Issues / problems being faced on the spit today.
5. How the spit is being managed / protected.

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