

**PHYSICAL GEOGRAPHY**

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**FIELDWORK - HORNSEA**

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## FIELDWORK: PHYSICAL GEOGRAPHY

<p><b><u>Aim of enquiry (title of physical fieldwork enquiry):</u></b>          “What direction does longshore drift move sediment at Hornsea?”</p>	
<p><b><u>Geographical theory - Diagram of longshore drift:</u></b></p>	<p><b><u>Explain how longshore drift works:</u></b></p> <p>As the wind blows onshore at an angle to the beach, it pushes the water towards the coast creating waves which picks up material and transports it towards the beach. This is known as the swash.</p> <p>As the waves lose energy, they then move back out to sea, pulling the material back with it known as a backwash.</p> <p>As this process continues to happen over time the material is moved further down the coast (downdrift) showing the direction of longshore drift.</p>
<p><b><u>Advantage of location:</u></b></p> <ul style="list-style-type: none"> <li>• Close to school → collect more data</li> <li>• Beach where longshore drift happens and groynes are used to try and stop it</li> <li>• The groynes trap sediment on one side and this can be measured and compared along the beach</li> <li>• Beach is easy to access</li> </ul>	<p><b><u>Risk assessment:</u></b></p> <ul style="list-style-type: none"> <li>• Getting lost – low risk – bring a map or use your phones to identify location</li> <li>• Trip and fall - low risk – wear appropriate footwear and have a first aid kit</li> <li>• Extreme weather – low risk – wear appropriate clothing, sun cream, sun hat etc.</li> </ul>
<p><b><u>Description of method:</u></b></p> <ol style="list-style-type: none"> <li>1. Got a copy of an OS map showing Hornsea beach. We identified a transect of the beach with 5 groynes</li> <li>2. Collect equipment.</li> <li>3. Identify which direction is north and south on the beach</li> <li>4. Walk to the north facing side of the groyne which is 10m away from the back of the beach.</li> <li>5. Place the ruler with 0cm at the top of the groyne and measure down to where the groyne meets the pebbles/sediment.</li> <li>6. Record this measurement.</li> <li>7. Walk up the beach, cross over the groyne at a safe point and walk down to the same measurement point. Repeat method of measurement for the south facing side.</li> <li>8. Do this for the rest of the groynes.</li> <li>9. Whilst walking down the beach also record other sea defences on a map such as rock armour, sea wall and dune re-planting.</li> </ol>	<p><b><u>Justifying the method:</u></b></p> <ul style="list-style-type: none"> <li>• By measuring the sediment drop on each side of the groyne we will be able see if there is a difference between the north and south facing sides of the groynes.</li> <li>• If there is a smaller drop (more sediment) on the north side compared to the south then longshore drift is moving from north to south</li> <li>• This method is easy to do - it will allow us to collect a lot of data in the limited amount of time</li> <li>• No expensive equipment required</li> <li>• Use systematic sampling – we measured every groyne, so did not miss any groynes or add in bias</li> </ul>
<p><b><u>Secondary data:</u></b></p> <ul style="list-style-type: none"> <li>• Environment agency - Erosion at Hornsea is increasing with a changing sediment gradient.</li> </ul>	<p><b><u>Maps &amp; photographs:</u></b></p> <ul style="list-style-type: none"> <li>• Used an OS map to work out the study area and identify the groynes on the beach</li> </ul>

- Took photos of the beach and other sea defences to get an overall picture of coastal erosion

**Data presentation method proportional arrows:**

- We drew located bar charts to show the drop in sediment between the north and south facing sides of each groyne.
- We drew the beach as a transect on a piece of paper to scale and marked on the location of each groyne
- We drew 5 bar charts. On the X axis was the 'Amount of drop measured in cm' and on the Y axis was the 'Drop facing side'
- Each bar chart was located to the relevant groyne.

**Justification of data presentation method:**

Effective:

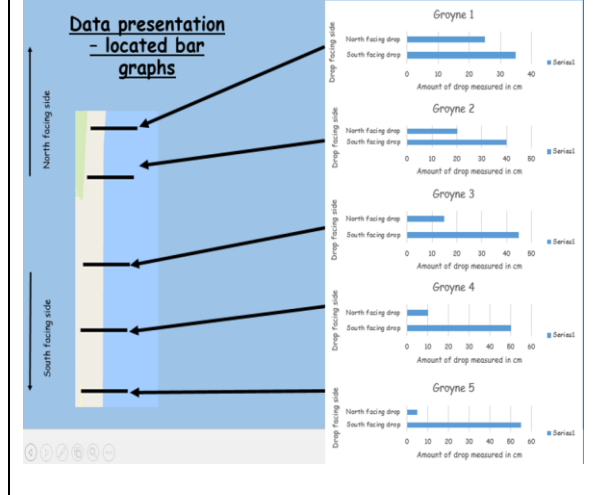
- Each individual bar chart was easy to draw
- Each bar chart shows the drop very clearly at its groyne and as a result it was easy to see the smallest drop was on the north facing side showing the direction of longshore drift

Not effective

- Time consuming to draw the groynes and each bar graph and then locating them
- Due to changes in the scales it is hard to see a pattern along the coastline as to whether the rate of longshore drift is changing

**Data analysis - Results**

- At groyne one the smallest drop was on the north facing side – a drop of 25cm
- At groyne two the smallest drop was on the north facing side – a drop of 20cm
- At groyne three the smallest drop was on the north facing side – a drop of 15cm
- At groyne four the smallest drop was on the north facing side – a drop of 10cm
- At groyne five the smallest drop was on the north facing side – a drop of 5cm
- This is the same at all of the groynes
- This suggests that **longshore drift does move in a north to south direction down the beach.**



**Conclusion:**

- Longshore drift is operating from North to South along the Hornsea coastline.
- The prevailing wind is blowing from the north-east.
- The swash is pushing material along the beach with backwash bringing it back down
- As it reaches a groyne the sediment builds up. This is always on the north facing side of the groyne
- This was true of all groynes measured

**Evaluation: Issues and solutions**

<b>Area it affects</b>	<b>Problem</b>	<b>Solution</b>
Method	Ruler – difficult to place the ruler down the side of the groyne Only visited 5 groynes – missed 8 groynes near Hornsea.	Use a tape measure – it is easier to bend the tape measure into the correct position Visit more groynes – working in groups
Results	Measuring where the ruler and the pebbles was not clear so had to guess leading to inaccurate results By not visiting more groynes the data set is very small and limits the sample size.	Using a tape measure makes it more accurate as there will be less guessing and each groyne will then be measured more accurately Visit more groynes a larger data set
Conclusion	The conclusion is not very strong. Probably correct for the data we collected as the errors with measuring would be small and would not alter the results too much. However only visiting 5 groynes makes the conclusion not very strong as we could have measured more groynes and collected new results altering the conclusion	By making improvements to the method the results will be more accurate and therefore improve the validity of my conclusion