**Summary of Physical Fieldwork Methodological Enquiry: New Brighton Coastline**

**Sampling Strategies**

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| Strategy | Sampling strategy | Explanation of why we used this |
| Mapping coastal management | Systematic | We walked along the New Brighton promenade and annotated onto our maps the different hard engineering strategies we could see. The systematic process was used to gain an accurate and reliable result for the coastline. |
| Wave count | Stratified | We took three readings every minute to ensure that we had a numerical value at three different readings to allow us to work out the average. |
| Rate of longshore drift | Systematic | Three readings were taken every five minutes to measure the length of time it took for the orange to travel the distance required. This allowed us to gain an average and a sample for the entire coastline. |
| Field sketch | Stratified | Each pupil was asked to produce a field sketch to demonstrate what they could see visibly and how the landscape was altered to support coastal defences. |

Justify why you used one of your sampling strategies. (How does it help to collect useful data in your enquiry?)

**Geographical Enquiry Focus**

Enquiry Question: *Is there evidence that hard engineering strategies have been successful in the protection of the New Brighton coastline.*

Hypotheses: *Hard engineering strategies are the most suitable method of coastal protection in New Brighton.*

**Data Analysis**

**What did we find from the wave count?**

The results from the wave count suggest that there is a significant amount of destructive waves in the area, this in turn suggests that there may be a large rate of erosion along this coastline. With the higher risk of erosion occurring it is suitable for there to be hard engineering coastal defences in place to ensure that the town is protected.

**What did we find out from the longshore drift measurements?**

We found that the overall average rate of the movement of the orange was around 55 seconds to travel 5 meters, which is a significant distance in a short amount of time. This suggests that the current is strong and therefore the transportation rate is high meaning a large amount of sediment could be carried further down the coastline in a short period of time. The implementation of hard engineering strategies therefore may be a requirement to ensure that sediment is not lost and there isn’t a resultant ‘starved beach’ as this could also contribute to an increase in the erosion rates.

**What did we find out from the field sketch?**

The field sketches drawn showed clear evidence of a landscape that was offering a number of different coastal defence strategies to ensure the protection of the land uses found along the promenade. Sketches included the main road into New Brighton, the railway line, a key transport connection to Liverpool and also a large number of houses. These are all incredibly vital to the local economy and ensuring that investment is brought in to the area. As a result it is clear to see that the council is keen to protect this coastline to minimise the damage done to the human land uses along the promenade as tourism and recreational facilities are key to the investment in New Brighton.

What does this tell you about the site?

The result suggest that the waves were fairly destructive, suggesting that hard engineering may be appropriate for the site and also the distance travelled was in a fairly shot length of time which also suggests a strong current and the likelihood of a large amount of sediment being moved a significant distance over time.

**Data Collection Methods**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Primary |  | Secondary |
| Qualitative | **Field sketch**  **Mapping of coastal environment** |  | **Internet research**  **(Council data)** |
| Quantitative | **Wave count**  **Measuring longshore drift** |  |  |

**Why did we use both primary and secondary data?**

We use both primary and secondary data in a fieldwork investigation to try and make our results as reliable as possible. We look at secondary data during physical investigations so we have a starting point and can compare results. This gives us an idea of whether our results are inaccurate or not.

***Justify why you used one of your primary data collection techniques. (How does it help in your enquiry? Why did you collect the data in the way that you did?)***

*One advantage of using the wave count is it gives you a numerical reading and an idea of how fast the current is moving. It is visual and is less subjective and down to opinion. A disadvantage is weather; human error can affect its reliability.*

**Fieldwork Location**

Study Site: New Brighton Coastline

Why did we visit sites all the way down the promenade?

We decided to visit numerous areas down the coastline to ensure we had covered all the different coastal defences found along the coastline, whether they are hard or soft engineering strategies.

**Focused upon:**

* Mapping coastal management strategies along the North Wirral coastline.
* Wave count – Measuring the frequency of waves to decide which are constructive/destructive.
* Measuring the rate of longshore drift – oranges and timers
* A ‘picture’ of the coastal management – Field sketch to annotate.

We only visited this area of New Brighton because of the time constraints which limited the time we had in the area. The promenade gave us a good insight into the defences in place and how successful these were.

**Conclusions**

What conclusions can you draw from your results? (How does it help in your enquiry? Why did you collect the data in the way that you did?)

From looking at the overall results of this environment we have come to the conclusion that the hard engineering strategies in place along the New Brighton coastline as a success.

Evidence collected from our fieldwork suggests a strong and erosive current which could play a big part in the rate of destruction along this promenade.

We have identified at least 4 different hard engineering strategies in place **(sea wall, groynes, rock armourment and wave barriers)** which all act to prevent erosion of the New Brighton promenade. From visiting the site we have seen very little (if any) damage done to this coastline. The result of the successes of this hard engineering defences has encouraged businesses and leisure and recreational facilities to set up in the area knowing that the coastal protection was in place.

The success of these hard engineering strategies will come at a cost to the local council who will rely on extra funding to support the maintenance and the monitoring of these coastal defences on a daily basis. However, the aim to bring investment into the local economy from businesses, services and transport networks encourages visitors to access all that New Brighton has to offer and supports the extra funding required for its defence.

To improve the overall conclusion, the hypothesis’ could be challenged further by visiting on days throughout a week to witness and measure the success of these coastal defences during different weather conditions.

Overall the hard engineering strategies work successfully along this coastline and are vital to the development that is taking place in the region, protecting both humans and also the coastal wildlife.

**Links to Geographical Theory**

When comparing your analysis to the theory – We expect to see a contrast in environments.

However, the more destructive the wave, the greater the rate of erosion and therefore further coastal defences required to maintain the area and its human uses.

**Evaluation**

How accurate, reliable or bias were your results?

|  |  |  |  |
| --- | --- | --- | --- |
|  | Strengths | Limitations | Improvements |
| Methods | **We tried to use a number of quantitative methods to try and reduce opinion based conclusions.** | This sometimes meant that our results were affected by human error. A big limitation of this as well is that it does not take into account outside factors, such as the fact there was a sinkhole nearby to Site 1. | To improve our results, we would go back and visit New Brighton at the end of the winter season, were precipitation levels would of increased the likelihood of more frequent waves and a stronger current meaning our results might have been more accurate. |
| Results | **We had a range of quantitative data results that we could analyse in class.** | There seemed to be little differences between our results which argued a strong case for the use of hard engineering strategies. | To improve the reliability of our results we would run another trip to improve the reliability of our results and also the accuracy. |

Line graph

Bar graph

Presentation Techniques

**Risk Assessment**

|  |  |  |
| --- | --- | --- |
| Hazard | Risk | Strategies to Minimise Risk |
| Slippery rocks  Cold weather  High river levels | **Slips, trips, falls**  **Hypothermia**  **Pupil getting into difficulty** | **Walking shoes, wellies, 1 leader per group.**  **Advise pupils to wear warm clothing; check forecast.**  **Group leaders, emergency phone numbers and meeting places.** |

It is important to carry out a risk assessment for two main reasons. Firstly, it is important to ensure that pupils and staff are safe so that the learning environment is not dangerous or risky. Secondly, it is important to reduce risk so that time is managed effectively and we get enough data collection and work done on the day. This will ensure that our investigation is a successful one.

**Data Processing**

How did we analyse data

on the New Brighton coast?

**New Brighton beach:**

Mean wave count = 24

Time for 5 meters travelled = 55 seconds

**Data Presentation – How did we present our data?**

Pick 2 data presentation techniques:

**Describe the advantages and disadvantages to using these techniques**:

One advantage of using a bar graph is that it is visual and easy to read. It is also easy to create. One disadvantage is that it can be simplistic and hides small data values.

One advantage to a line graph is it can show the relationship between two pieces of data. A disadvantage though as well is that it can hide small values.