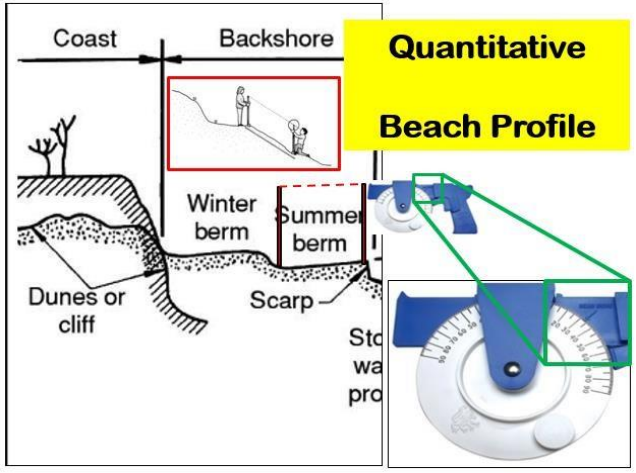
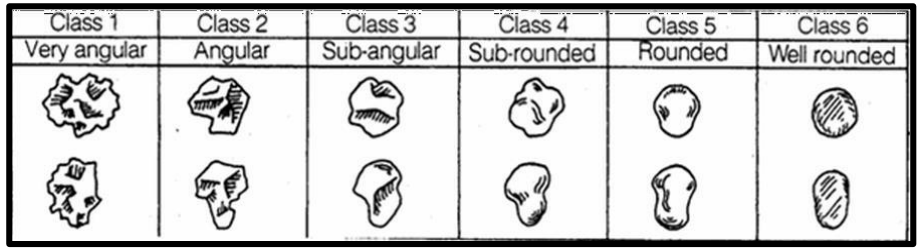
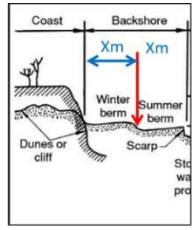
Endon Geography

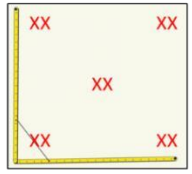
Knowledge Organiser – Topic 6: Geographical Investigations
Coastal Fieldwork - It is important to be able to evaluate everything that we did.

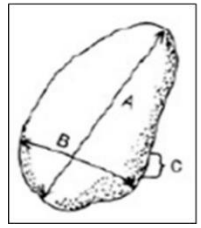
Stage in enquiry process	What we did
Stage 1 – Understanding the kind of questions capable of being investigated through fieldwork	**Hard Engineering prevents longshore drift moving sediment along the North Wales coastline.** Hypotheses: 1. The beach profile gradient will increase as we travel further East as more deposition will have occurred there. 2. As we travel in the direction of longshore drift, particle size will decrease due to attrition and will become more rounded due to abrasion.
Stage 2 – Understanding the range of methods used in fieldwork	We adopted a stratified strategy to select sites at three different geologies with different defences, following the longshore drift along the coast. **<u>Primary Data</u>** **Quantitative** data is often objective and numerical in nature. **Enquiry: Beach profile (using ranging poles and clinometer) and sediment analysis (using a quadrat and ruler for size and Power's Index of Roundness for shape)**











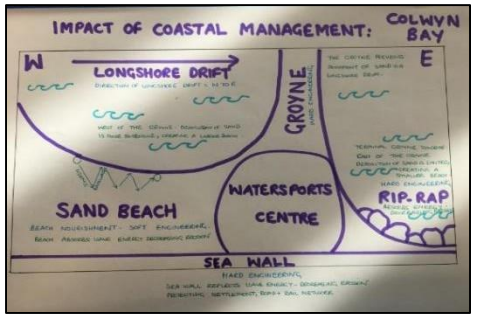
Sediment Axes

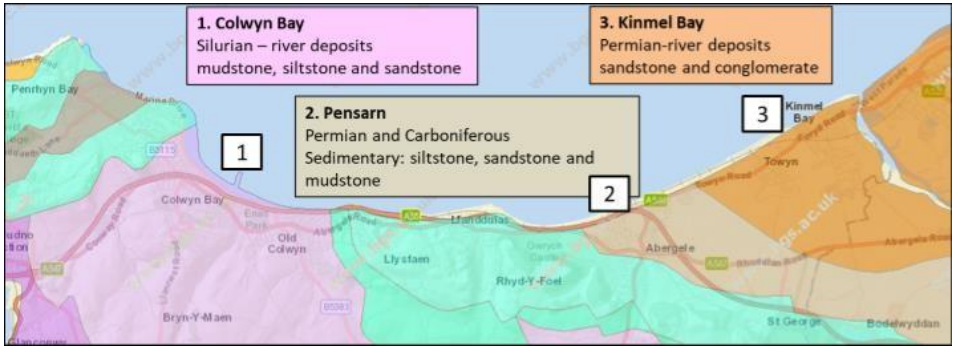
A: Long axis (length)

B: Middle axis (width)

C: short axis (depth)

Stage in enquiry process	What we did
Stage 2 continued	**Qualitative data** is often subjective/opinion based and descriptive in nature. **Enquiry: Annotated field sketches**



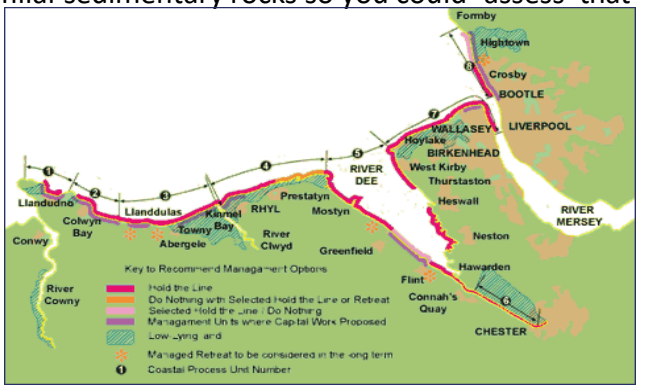


Secondary Data

Geology Map –It was useful for selecting sites and looking for rock type or discordant/concordant coasts. Itrevealed that the coast is composed of sedimentary rocks such as mudstones and sandstones which are fairly vulnerable to erosion.

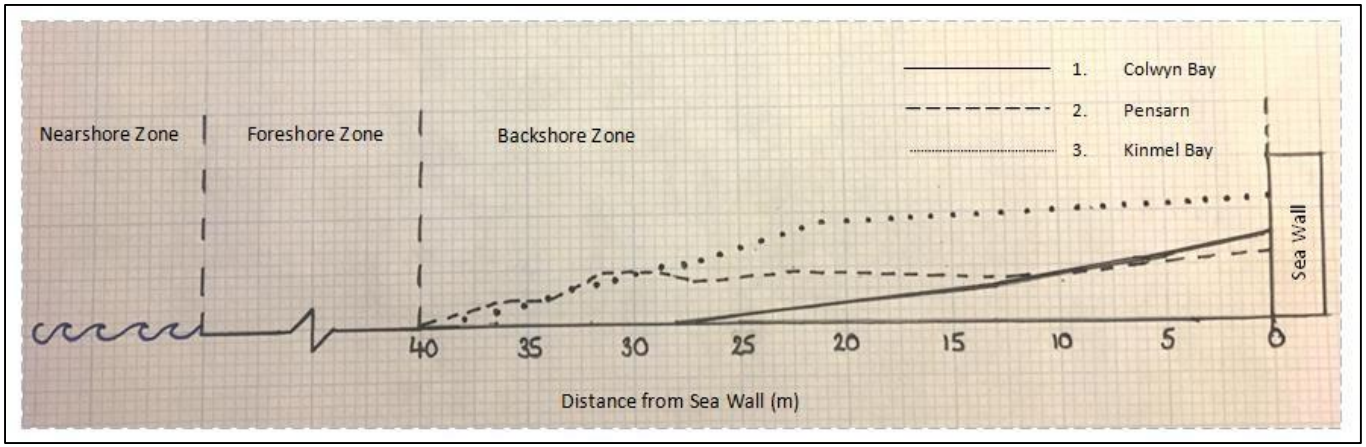
This coast is discordant as it has a headland and bay, with the Great Orme a limestone headland. However we only worked within the bay and actually the rock types were all fairly similar sedimentary rocks so you could 'assess' that it was not particularly useful.

Secondary data was also used for Kinmel Bay, as we no longer collect primary data from here due to time constraints.



Shoreline Management Plan – Useful for identifying coastal management that has taken place that may influence coastal processes and the economic value placed on the communities being protected. It showed that the entire stretch of coastline that we studied was under the 'Hold the Line' approach.

Stage in enquiry process	What we did
Stage 3 – Processing and presenting fieldwork data in various ways	Beach Profiles were used to compare gradient at different points.



Sediment Size and Shape were shown in data tables, using statistical techniques: mean, median, mode and range.

Sediment **Size (cm)**	2 Pensarn	3 Kinmel
Mean	2.9	3
Median	2.9	2.9
Mode	2	3.7
Range	2.7	4.2

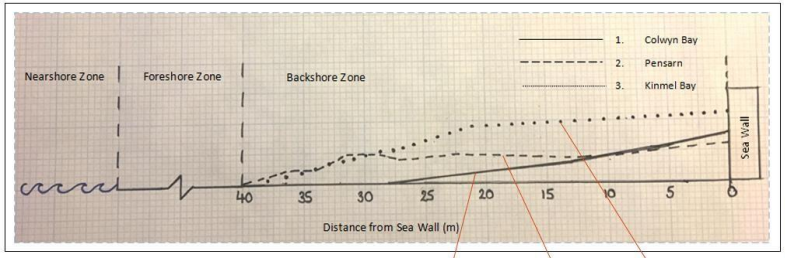
Figure 2b. Descriptive statistics of sediment size

Sediment **Shape**	2 Pensarn	3 Kinmel
Mode	3	6

Figure 2c: Descriptive statistics of sediment shape

Due to the discrete nature of the data set, it is not appropriate to calculate mean, median and range for sediment shape.

Stage in enquiry process	What we did
Stage 4 and 5 – Analysis and Conclusions	



The results were that it does

However, are there any limitations to making that conclusion?

Beach Profile Limitations

- Limited number of sites – three. More sites along the coastline would increase the reliability.
- Human error – can we trust that the data was accurately collected?
- We know from secondary research that beach nourishment has occurred along this coastline as part of the Shoreline Management Plan, so that would significantly alter the beach profile.
- Other factors can affect the gradient of a beach, such as whether it is affected byconstructive or destructive waves.
- The Shoreline Management Plan is to "Hold the Line" along the entire stretch of coast that we visited so we were unable to compare with unmanaged coastline (i.e. judge the effect of coastal management measures)

We also expected that as the beach material was transported it would have been eroded by attrition to make the particle size smaller and abrasion to make it more rounded.

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Figure 2b. Descriptive statistics of sediment size

Sediment Shape	2 Pensarn	3 Kinmel
Mode	3	6

Figure 2c: Descriptive statistics of sediment shape

Due to the discrete nature of the data set, it is not appropriate to calculate mean, median and range for sediment shape.

However the results say that actually the mean sediment size got larger!
And because the sediment was so small at Colwyn Bay we couldn't measure size or roundness.

Stage 6 - Evaluation	Limited number of sites – 2 (but only one where sediment was measurable). More sites along the coastline would increase the reliability. Human error – can we trust that the data was accurately collected? We know from secondary research that beach nourishment has occurred along this coastline as part of the Shoreline Management Plan, so that would significantly alter sediment size and shape as well as beach profile. Other factors can affect the gradient of a beach, such as whether it is affected by constructive or destructive waves. The Shoreline Management Plan is to "Hold the Line" along the entire stretch of coast that we visited so we were unable to compare with unmanaged coastline (i.e. judge the effect of coastal management measures) Sediment size was too small to measure size or roundness at Colwyn Bay. We didn't gather any results on "communities" other than our field sketches so we don't really have the evidence to make a conclusion on the impact on communities. We should perhaps have done questionnaires?