

Research question:

How do natural processes influence the shapes of beach profiles at Ruakaka Beach and Waipu Bay and are they considered characteristic of constructive or destructive beach processes?

Different processes on a beach can erode, transport and deposit sediment... to research this question these processes will need to be identified by first analysing the wave characteristics ... dune vegetation growth ...(1)

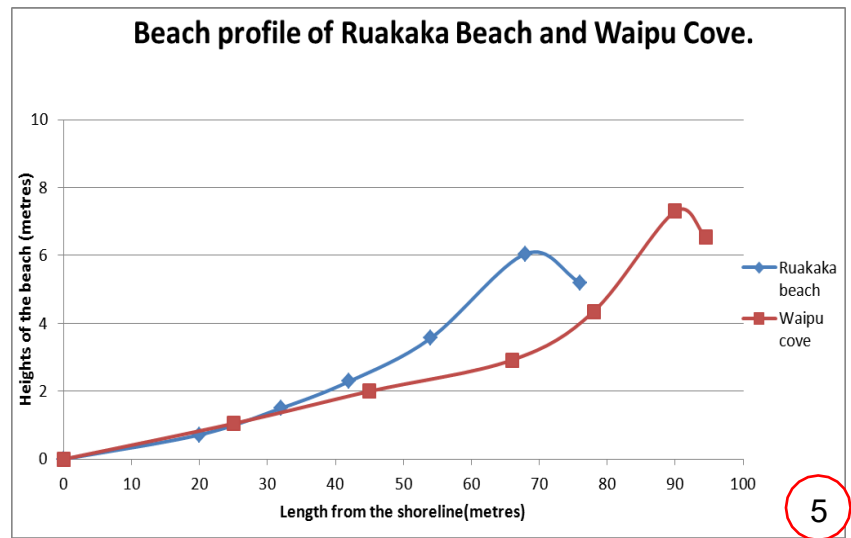
At Ruakaka Beach and Waipu Bay we will record wave data such as height, frequency, angle to the shoreline... be able to calculate the waves' period and length... Beach profiles data will be collected using at both locations...

Longshore drift will be calculated by ...

To construct beach profiles of both locations an inclinometer will be used ... this will required processing data using trigonometry to determine slope angles (2)...

...Data will be presented in both tables to show the final calculations and also graphs for visual representation... Profiles will be shown together to make it easy to compare the evidence (3)...

4 Slope data			
Ruakaka Beach		Waipu Cove	
Length (m)	Height (m)	Length (m)	Height (m)
0	0	0	0
20	0.75	25	1.05
32	1.5	45	2
42	2.29	66	2.90
54	3.55	78	4.35
68	6.05	90	7.1
76	5.2	94.5	6.54



The beach profiles are clearly similar, but the graph shows a number of subtle differences when the profiles are displayed together.

At Waipu Cove the foredune is very steep, while the beach face is a relatively gentle slope from the start of the measurement to the area that I decided was the Mean High Water Level. 75m from the water it is still less than 4m high. From here the

beach began to slope more steeply rising over 2.5 metres in just over 4m and where there was a small berm... The final height of the foredune in 7m (6).

At Ruakaka the beach has much less variation in the angle of the slope. The gradient of the beach is steeper at Ruakaka reaching 6m in height less than 70m from the shore line. The foredune at Ruakaka is evenly sloping and reaches a final height of 6m. There is a clear berm and the beach face is steeply sloped. The foredune is much less sloped and is not as high as the fore dune at Waipu Cove (7)...

The wave data for both beaches proves them to be constructive and this explains the fairly gently slopes. Wave frequency of 6-8 per minute was the average and this strongly supports the building up of the beaches through deposition of sediment...(8)

Wave heights are also characteristic of waves that will be depositing sediment and thereby building up the beaches. At Ruakaka wave height was 0.682m and at Waipu Cove it was 0.694m...

In conclusion the wave processes and characteristics clearly influenced the gentle beach profiles at Ruakaka and Waipu Cove. Constructive waves were evident and they were depositing sediment carried by the process of longshore drift... The wave frequency and height were considerably less than what would be needed to erode the beaches. To be destructive the frequency would need to be about 14 waves per minutes and have a strong backwash and thereby removing sediment. The wave data recorded showed a frequency of between 6 and 8 waves per minute with a strong swash which deposited sediment up the beach...(9)

The sediment deposited by the waves was further transported by the predominant south easterly winds which created the dunes...