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# 3

91426



914260



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## Level 3 Geography 2022

### 91426 Demonstrate understanding of how interacting natural processes shape a New Zealand geographic environment

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of how interacting natural processes shape a New Zealand geographic environment.	Demonstrate in-depth understanding of how interacting natural processes shape a New Zealand geographic environment.	Demonstrate comprehensive understanding of how interacting natural processes shape a New Zealand geographic environment.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (XXXX). This area may be cut off when the booklet is marked.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**Achievement**

**TOTAL**

**04**

ASSESSOR'S USE ONLY

## INSTRUCTIONS

Identify a **New Zealand geographic environment** and the **interacting natural processes** that shape it, in the space below.

New Zealand geographic environment: Golden Bay geographic environment.

Interacting natural processes that shape this environment: Longshore drift, wave erosion, wave ~~def~~ refraction, Saltation, Aeolian action.

You may use the space below to plan your response. Begin your answer on page 3.

### PLANNING

- Map of processes dominant in Golden Bay
- Spatial variations shown throughout 4 different sites in Golden Bay
  - ↳ ~~integrate~~ integrate processes and main features
  - ↳ diagrams of processes and features
- diagrams
  - wave refraction
  - spilling breakers
  - plunging breakers
  - saltation
  - tentacles
  - mudstone arching/leaves
  - spit formation 1
  - spit formation 2.



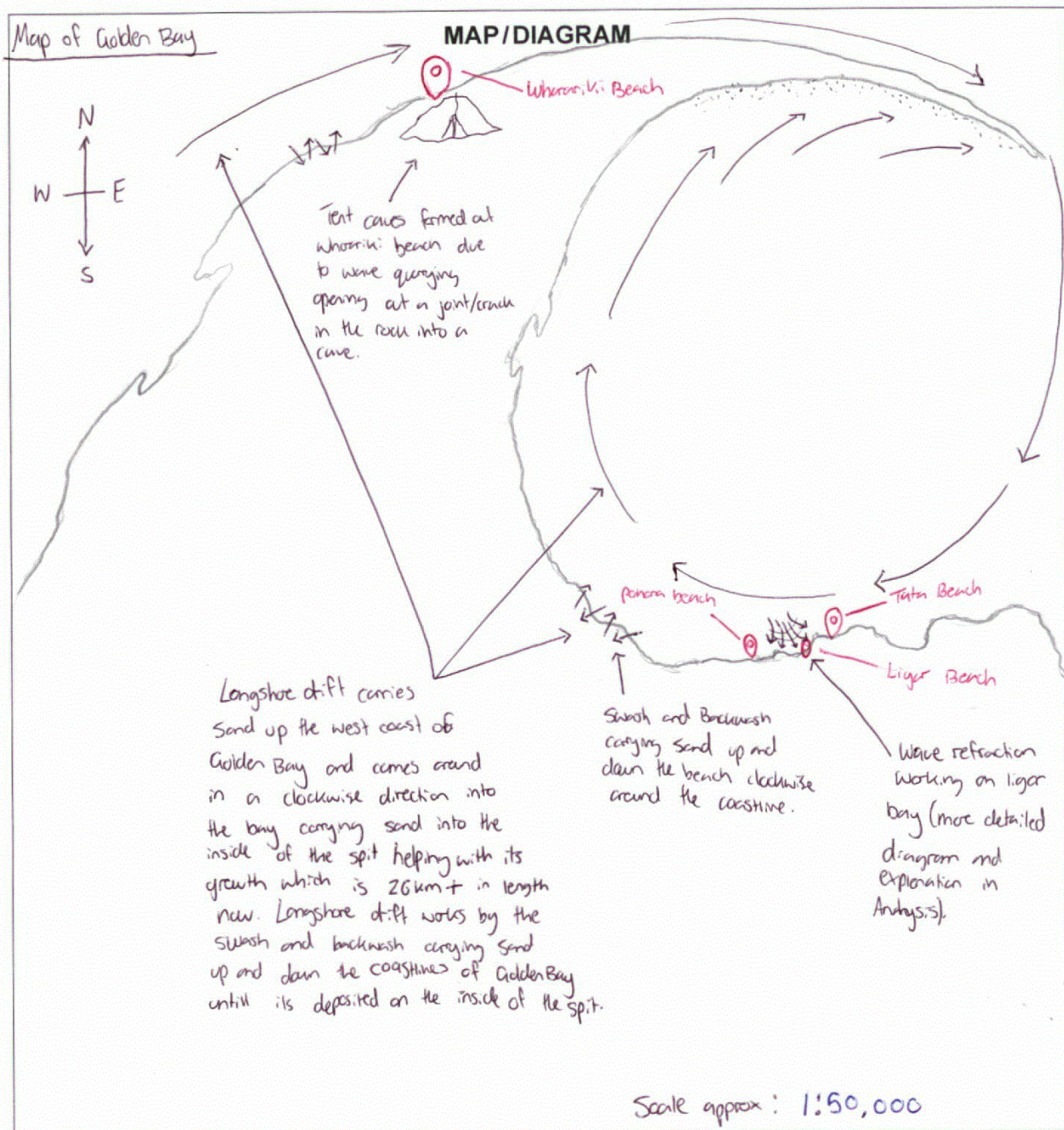
## QUESTION

Analyse how different processes operate and interact to create spatial variations in your chosen geographic environment.

Your analysis should include:

- what the spatial variations are in your geographic environment
- why different processes operate in different places in the environment
- how the interactions cause spatial variations in features, elements, or processes
- integrated comprehensive supporting case study evidence.

Use the space below to construct a map or diagram to support your written response. You may also include additional diagrams and maps in your response.





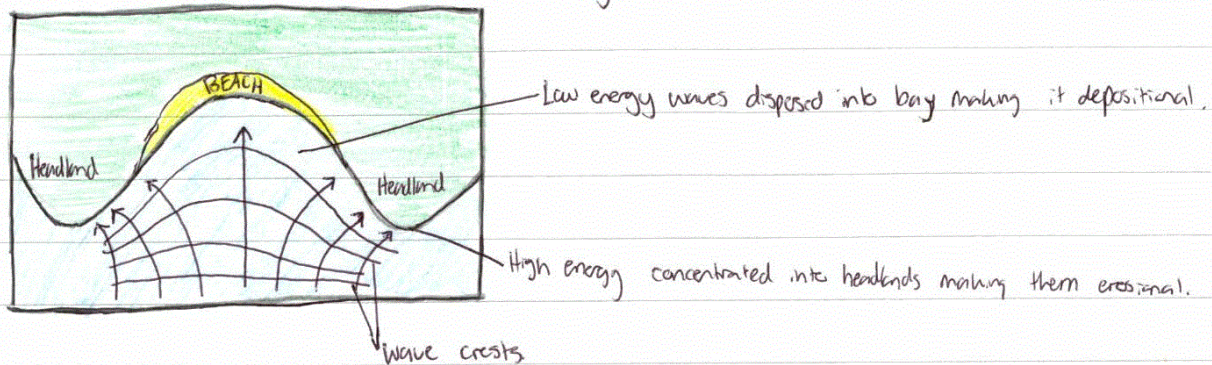
The spatial variations inside Golden Bay are shown by the four main coastlines in Golden Bay and how the changing interacting processes change the spatial variations and features at these four main coastlines / Beaches.

Tata Beach the first main coastline inside Golden Bay has few dominant features one including the Tata boat ramp, which is situated in the middle of the beach and has an interesting feature where the sand is built up on the right side (~~West~~ <sup>East</sup> side) much more dominantly than the left side (west side) making the west side of the boat ramp have a much more significant drop as the East side of the ramp is 60cm from the sand to the top of the ramp at the highest point and the west side is 1.5m from the sand to the highest point in the ramp showing the significant difference. This feature is because of Longshore drift as shown on my map of Golden Bay, the sand is carried around the bays coastlines in a clockwise direction and with the location of Tata beach and the direction of movement of longshore drift it directly correlates to the buildup of sand on the East side of the boat ramp, showing how the boat ramp is stopping and blocking the process of longshore drift for a small section of the beach. Another feature dominant at Tata Beach is the meter high eroded bank at the top of the beach and this is due to the steep profile of Tata beach, causing the dominant wave type to be (erosional plunging breakers) which during storms or extreme high / ~~low~~ King tides would be the causation for the eroded bank at the top of the beach.

The second location or ~~dominant~~ main coastline inside Golden Bay is Ligar beach / bay. Ligar's main and nearly only dominant features are its rough rocky headlands but gentle shallow beach. This is due to the process of wave refraction on Ligar bay, wave refraction working on Ligar bay can be seen during days with high tidal action therefore high wave energy as you can see the bending and refraction of the waves entering the bay. The way



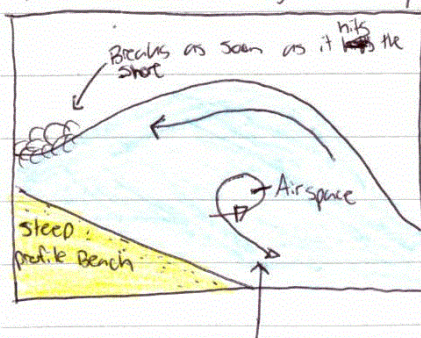
Wave refraction works is how the high energy waves are concentrated into the headlands making them rough and erosional with the low energy waves dispersing into Liger bay making Liger's waves dominantly spilling breakers causing the coastline to be depositional. This small diagram shows how wave refraction works on Liger Bay.



The reason why wave refraction concentrates high energy waves into the headlands is because its working towards equilibrium, which means wave refraction is trying to straighten the coastlines out.

The third location is pchara which is another main beach/coastline of Giddensburg. Pchara's main dominant features are its flat open beach profile and plentyfull amount of driftwood collected at the top of the beach due to spilling waves because of its flat profile making pchara depositional. Another dominant feature at pchara would be its grassy dunes at the top of the beach. These would have been created and formed due to the depositional spilling breakers carrying sand up the beach and also

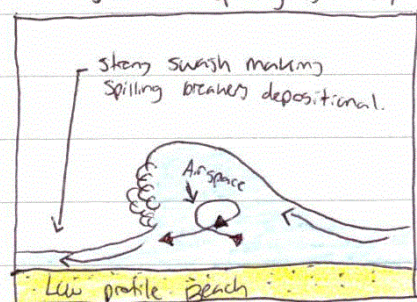
(Diagram of plunging Breaker)



(Storm backwash making plunging Breakers erosional.)

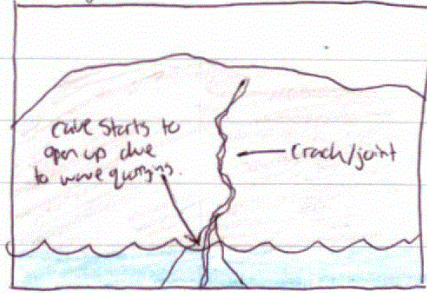
helping with their formation. (Saltation).

(Diagram of spilling Breaker)



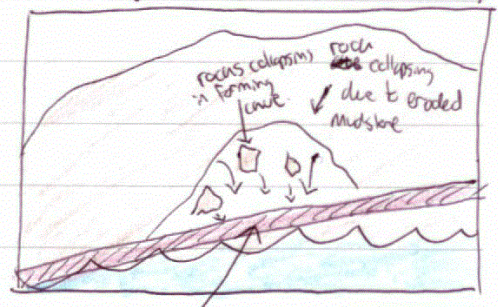


The best site/dominant coastline in Golden Bay is Wharariki. Wharariki <sup>has</sup> probably the most spatial variations compared to the other sites ~~throughout~~ throughout Golden Bay with many dominant features. One of these dominant features is Tent caves. Tent caves are formed by a crack or joint in a rock face which then is opened up by wave erosion into a cave, mainly due to wave quarrying smashing into the crack/joint. (Diagram of Tent cave).



Another Main feature at Wharariki would be Mudstone caves and archways. Mudstone caves are created by a large collapse in a rockface due to an undercut

of mudstone which can span in width from ~~about~~ 20cm to 2m in size. Due to mudstone being such a soft stone it erodes faster than the surrounding rock causing in a collapse creating a cave. The erosion of mudstone is due to wave erosion, mainly abrasion but can also be helped by wave quarrying and earthquakes. (Diagram of Mudstone cave).



Dunes are also a very dominant feature at Wharariki and some are several or more meters in height. The process that has formed these dunes is saltation which is caused by almost constant Aeolian action at Wharariki.

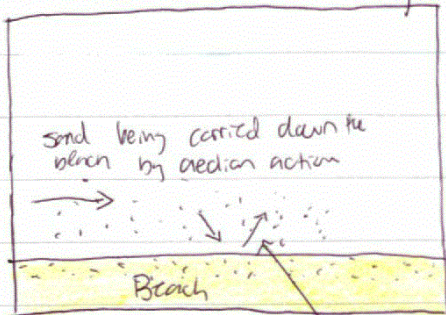
Saltation is the process of sand bouncing down the beach colliding with other sand particles/grains causing them to launch into the air and some get carried across the surface of the beach creating great buildups of sand which is how the dunes are formed. The dunes at Wharariki are running parallel to the coastline pointing to a ~~(North East)~~ <sup>North East</sup> direction due to dominant South west winds. Saltation is the process behind the dune growth at Wharariki but there are also <sup>other</sup> natural features



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that ensure the stabilisation and growth including dune grasses which are seen plentiful at various sites to help stabilise the dunes.

(Diagram of saltation.)



(sand hitting other grains and launching them into the air.)

You can see how all of these different features at different sites create spatial variations due to different processes affecting different areas of the coast to different extents.

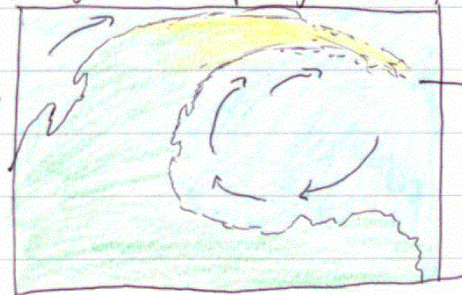
There is one last feature which has already partially been discussed which is Forewell spit (The spit of Golden Bay) which has been mentioned in my map. The process behind the spit growth is longshore drift which carries sand around the inside of the bay and gets deposited on the inside of the spit. The spit has grown tremendously over time and is up to or more than 26km in length now.

(Diagram of spit growth 1.)



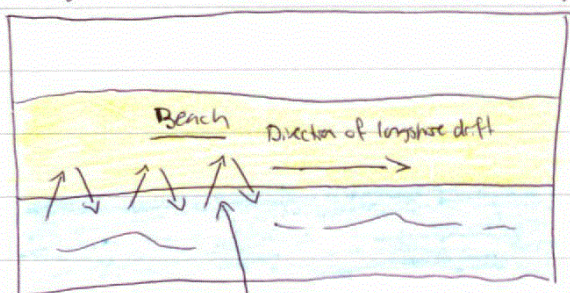
over Time

(Diagram of spit growth 2.)



spit has grown due to longshore drift and will continue to grow.

(Diagram of how longshore drift works.)



Swash and backwash carries sand in a certain direction up and down the beach.

Geography 91426, 2022

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Extra space if required.  
Write the question number(s) if applicable.

QUESTION  
NUMBER

91426



## Achievement Exemplar 2022

Subject	Geography	Standard	91426	Total score	04
Q	Grade score	Annotation			
1	A4	Answer is well described and includes some supporting case study evidence. Interactions are described and diagrams are used to support descriptions. Not enough detail case study evidence or explanation of interactions for answer to gain Merit.			