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91426



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NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
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## Level 3 Geography, 2017

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

2.00 p.m. Wednesday 22 November 2017  
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.

**You should attempt the question in this booklet.**

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

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

**Achievement**

**TOTAL**

**04**

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**INSTRUCTIONS**

Use page 3 to identify a **New Zealand geographic environment** that you have studied, and the **interacting natural processes** that shape it; and to plan your response to the question below.

Draw and explain map(s) and/or diagram(s) on page 4 to answer part (a).

Begin your written answer to part (b) on page 5, integrating comprehensive, supporting case study evidence about your New Zealand geographic environment and the interacting natural processes that shape it. You may include relevant map(s) and/or diagram(s) to support your answer as appropriate, and/or refer to the map(s) and/or diagram(s) that you have drawn and explained on page 4.

**QUESTION**

- (a) Draw map(s) and/or diagram(s) that explain how ONE natural process operates in your chosen New Zealand geographic environment.
- (b) Comprehensively analyse how the process you have drawn and explained in part (a), interacts with at least one other natural process, to shape a feature(s) in your chosen New Zealand geographic environment.

New Zealand geographic environment:

*Tauranga Coastal Environment*

Interacting natural processes that shape this environment:

*1) Wave Refraction*

*Other natural processes - Volcanism, Sea level rising, Hydraulic action, ~~and~~ wave erosion and wave deposition.*

**PLANNING (OPTIONAL)**

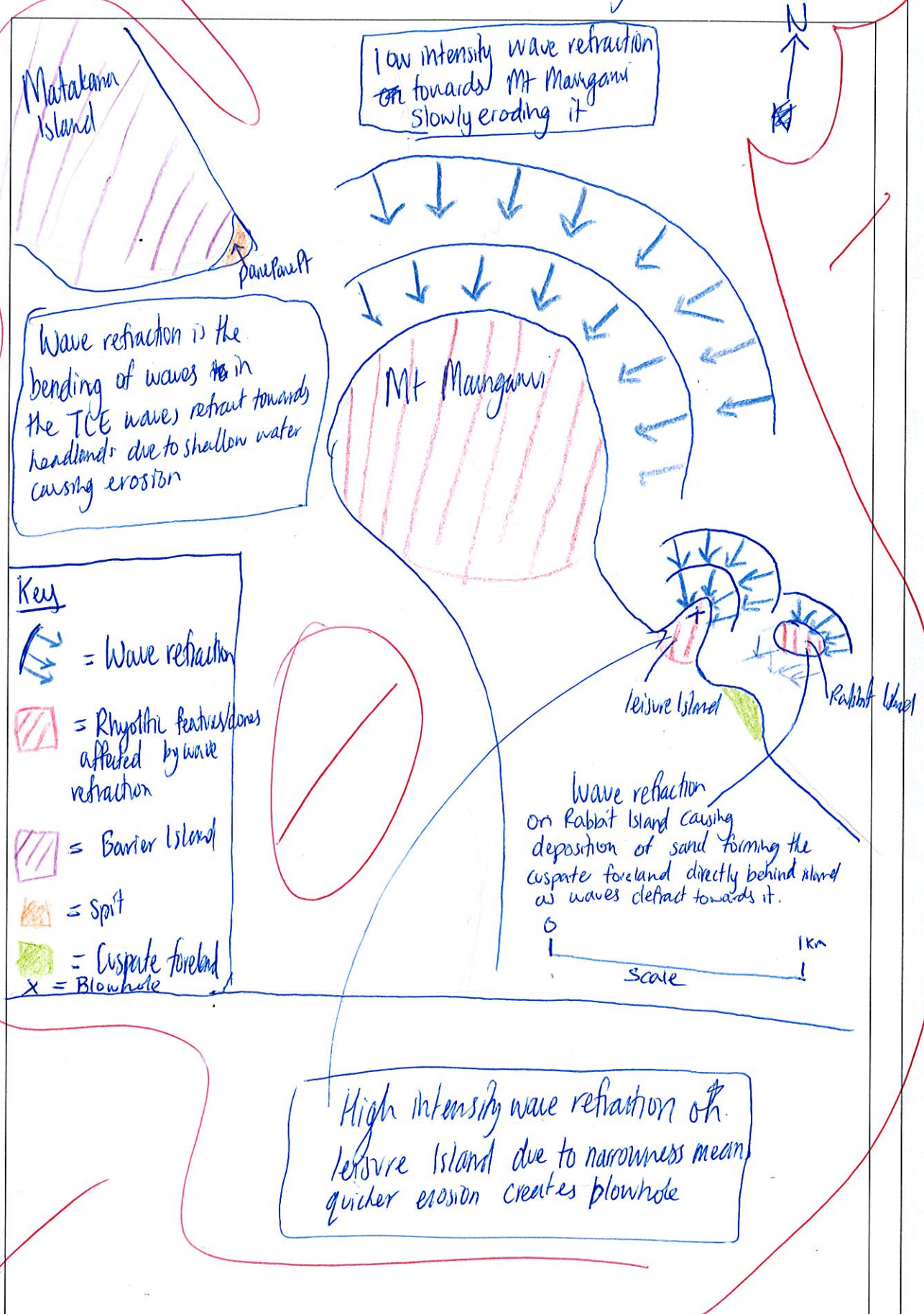


- (a) Draw map(s) and/or diagram(s) that explain how ONE natural process operates in your chosen New Zealand geographic environment.

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Natural process:

Wave Refraction in the Taurang Coastal Environment (TCE)





- (b) Comprehensively analyse how the process you have drawn and explained in part (a), interacts with at least one other natural process, to shape a feature(s) in your chosen New Zealand geographic environment.

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In your written answer:

- integrate comprehensive, supporting case study evidence about your chosen New Zealand geographic environment and the interacting natural processes that shape it
- refer to the map(s) and/or diagram(s) you have drawn on page 4, and/or integrate other relevant, detailed map(s) and/or diagram(s) as appropriate.

Interacting processes in the Tauranga Coastal Environment have shaped the land to become what it is today. Wave refraction combined with Volcanism, Sea levels rising, Hydraulic action, Wave erosion and Wave deposition ~~are also~~ are interacting processes that have formed the blowhole and cusped foreland.

During On the cusp of the Pleistocene and Pleistocene periods 2.5 million years ago Leisure Island and Rabbit Island (Rhyolitic domes) were formed. As subduction occurred between the Indo-Australian plate and the Pacific Plate effusive rhyolitic magma rose in the cracks of the surface forming 4 rhyolitic domes in the Tauranga Coastal Environment (TCE). The magma was effusive and gassy forming small air bubbles and cracks in the surface. This eruption and formation of Leisure Island and Rabbit Island this was the first two processes used in the formation of the blowhole and the cusped foreland and occurred 2.5 million years ago. Both the Leisure Island and Rabbit Island are between 50 metres - 30 metres long.

The next interacting process is the sea-levels rising this also interacts with the climate change (interglacial) where the warmer temperatures meant that sea levels ~~need~~ rose.

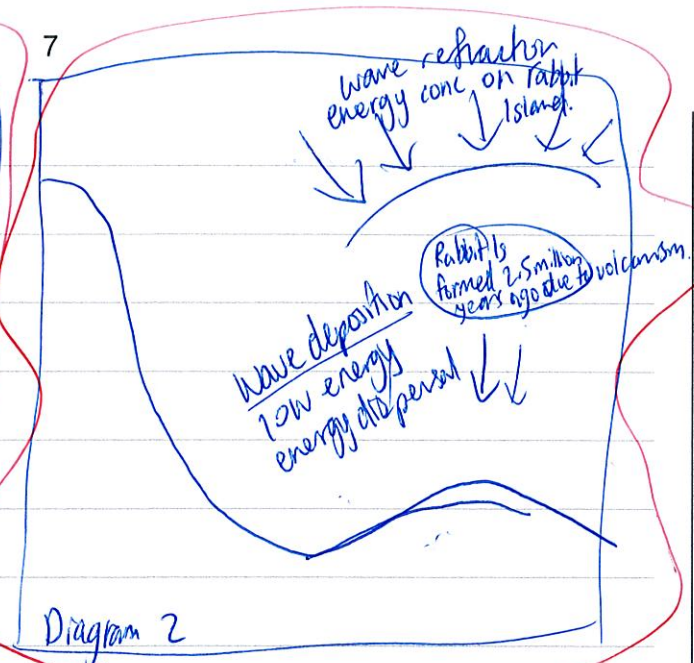
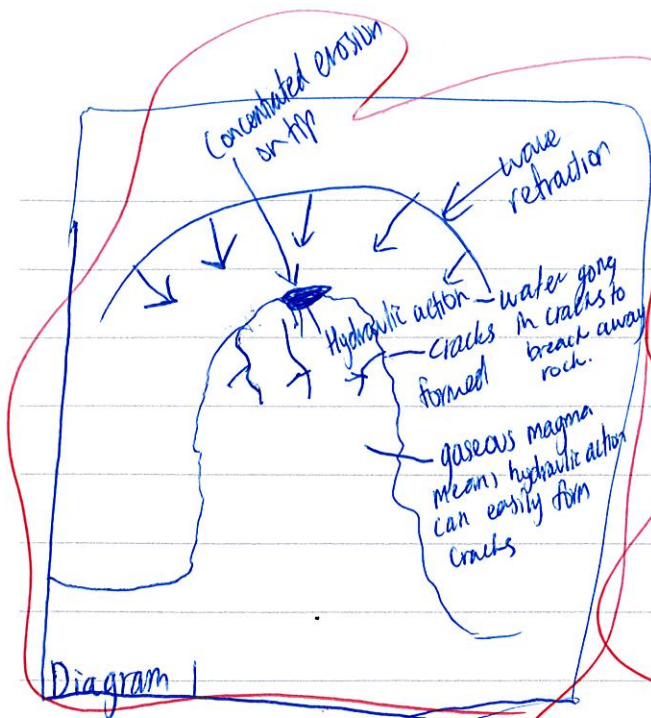


This occurred in the Holocene period 105 000 years ago to 4 000 years. The increase in sea level meant that the rhyolitic domes ~~are~~ were more exposed to fluvial processes such as wave refraction, hydraulic action, quarrying, wave erosion and wave deposition. The increase in sea level meant that water could go through small holes in the domes (because of the gaseous magma) and could form cracks through quarrying ~~and~~ hydraulic action. //

The most significant interacting processes to ~~the~~ create the blowhole and cusped foreland ~~are~~ is wave refraction, hydraulic action and wave erosion and deposition. These interacting processes occurred after the sea levels rose and started 4 000 years ago to present (still in Holocene period). These processes are what created the 20 m high and 10 metres wide blowhole 50 metre protruding cusped foreland. On Leisure Island the depth of the water in front of it becomes shallow (less than 5m) therefore the waves refract towards its tip the concentrated energy combined with hydraulic action/quarrying causes cracks to form creating a hole (forming a blow hole) as the waves continually erode the blowhole enlargens. The wave refraction is highly intense due to the Leisure Island's narrowness making the energy more concentrated on the tip. Due to ~~its~~ air bubbles formed during its volcanism stage water can easily erode the cracks and therefore hydraulic action occurs. These Hydraulic action and wave refraction are the most significant interacting processes ~~are~~ in creating the blowhole because without them the blowhole would never form. In Diagram 1 and the map shows how this process works. //



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Wave refraction combined with wave deposition formed the cuspate foreland. These processes started 4000 years ago and still occur. As the waves refract around Rabbit Island most of the energy is used up. This means that low energy waves (constructive waves) ~~to deposit~~ hit the shoreline in front of it. These waves are depositional causing sand to accumulate forming the cuspate foreland. This cuspate foreland protrudes, 50 metres seawards. All the processes, volcanism, sea level, wave refraction and wave deposition played a significant role however the most recent processes (wave refraction and deposition) were the ones that formed the cuspate themselves and therefore are the most significant. (Diagram 2 is a visual display of these interacting processes //

It is the interaction between processes that formed features of the Tauranga environment. These processes formed the blowhole and cuspate foreland. The shape of Tauranga's coastal environment has changed over time due to these interacting processes. //





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

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QUESTION  
NUMBER

Extra space if required.

Write the question number(s) if applicable.

ASSESSOR'S  
USE ONLY

QUESTION  
NUMBER



Subject:	Geography	Standard:	91426	Total score:	A4
Q	Grade score	Annotation			
Interaction of processes to shape a feature(s)	A4	<p><b>Setting: Tauranga Coastal Environment (TCE)</b></p> <p>The candidate gained a high Achievement, as they demonstrated a solid basic understanding of several processes that interacted within their named geographic environment. This provided sound evidence that the candidate understood the focus of the question, and they also comprehended the importance of the operation of interacting natural processes form a feature. However, the candidate could not achieve Merit, as their process analysis and reasoning lacked depth overall. The response also lacked detail case study evidence with little reference to the TCE being made throughout, as well as processes being described rather than explained in detail.</p>			