SUPERVISOR'S USE ONLY

3

91426

914260

Draw a cross through the box (☒) if you have NOT written in this booklet

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NZQA

Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

# Level 3 Geography 2024

## 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.

**There is ONE question to answer in this booklet.**

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

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

Do not write in the margins (////). This area will 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

## QUESTION

space ↑ time ↑ change

How do **interacting** natural processes create **spatial** OR **temporal** variations in a New Zealand geographic environment?

In your response:

- name a New Zealand geographic environment and the interacting natural processes that shape it
- construct a supporting annotated map or diagram in the space provided on page 3
- integrate comprehensive supporting case study evidence
- you may integrate other annotated maps and diagrams to support your answer.

You may use the space below to plan your response.

**PLANNING**

Napier location 39°S and 177°E

Te Kauwae-a-mai 20 km south-east from Napier

erosion for 100,000 years
→ stack 40m tall + 50m from promontory

Ocean beach slope less than 10° (sand bars)

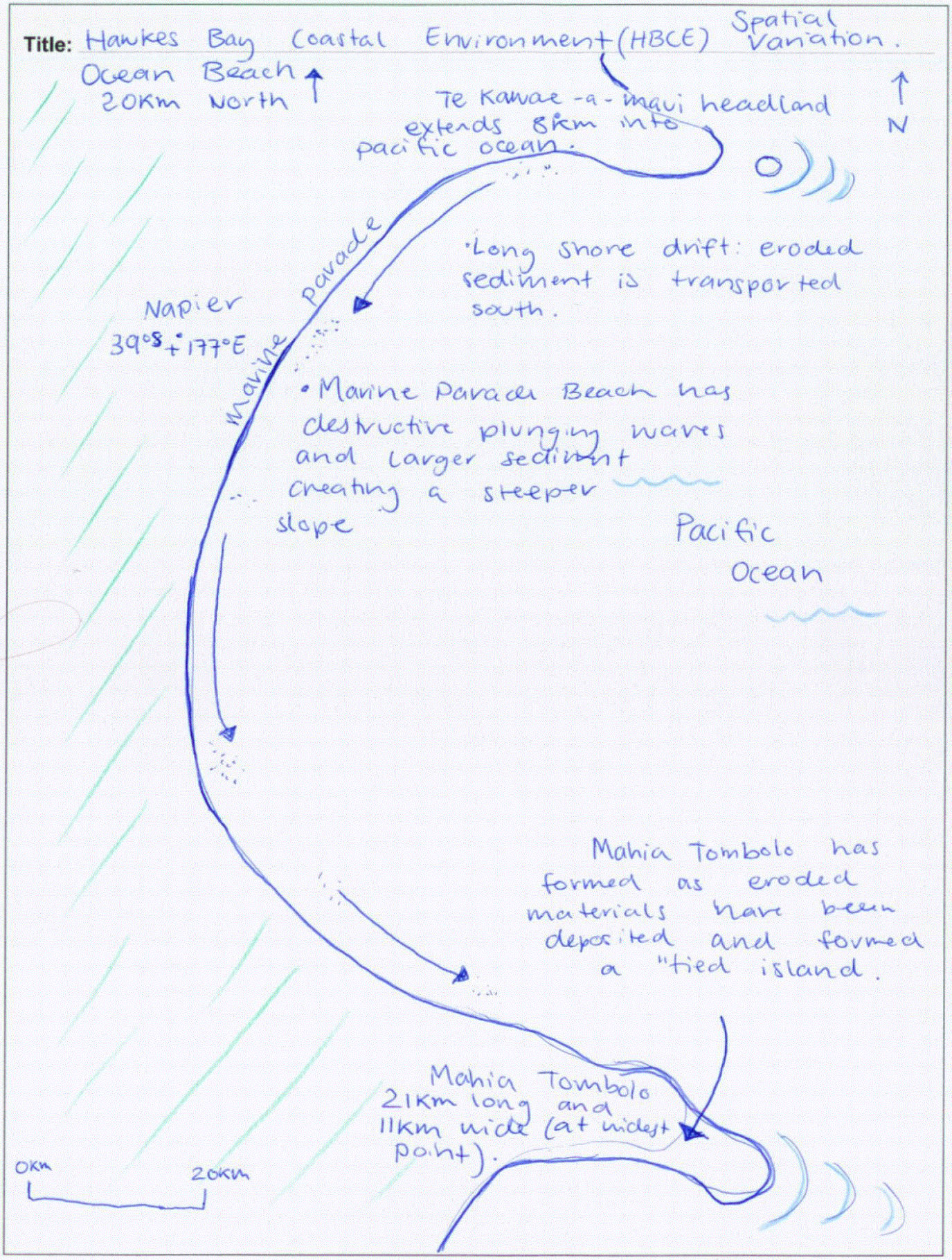
P1: Erosion @ Te Kawae-a-mai

P2: Long shore Drift (LSD) Tramportation through the bay

P3: Deposition - Depositional landform: Mahia Peninsula

Chosen (✔) variation: ☑ Spatial ☐ Temporal

## MAP/DIAGRAM

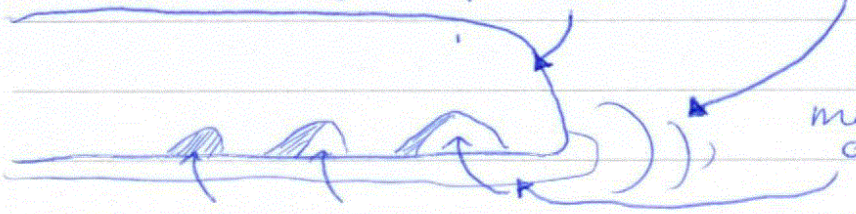


Hydrological processes of erosion, transportation, and deposition have interacted in the Hawkes Bay coastal Environment (HBCE) to create spatial variations that are unique to this environment.

The process of erosion occurs at Te Kauwae-a-mavi (Cape Kidnappers) peninsula located 20km North from Napier. Te Kauwae-a-mavi extends 8km into the Pacific Ocean, at the end of the headland is where the stack is located. This ~~stack~~ Geomorphological feature has resulted due to erosional processes of wave refraction, wave attack, and aeolean processes.

Formation of a stack.

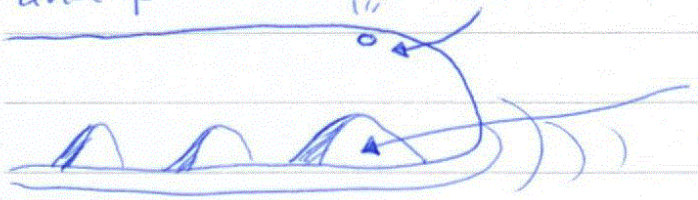
- Te Kauwae-a-mavi headland extends 8km into the Pacific ocean. Geomorphological processes occur here.



Wave refraction occurs as ponerful waves approach headland and curve as they meet the rising sea floor.

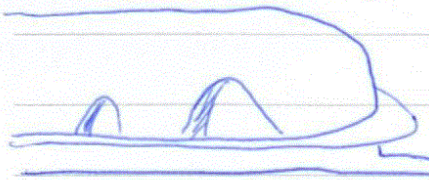
Wave attack erodes materials and forms caves

Blowhole forms as waves trap air against rocks and pressure creates cracks.



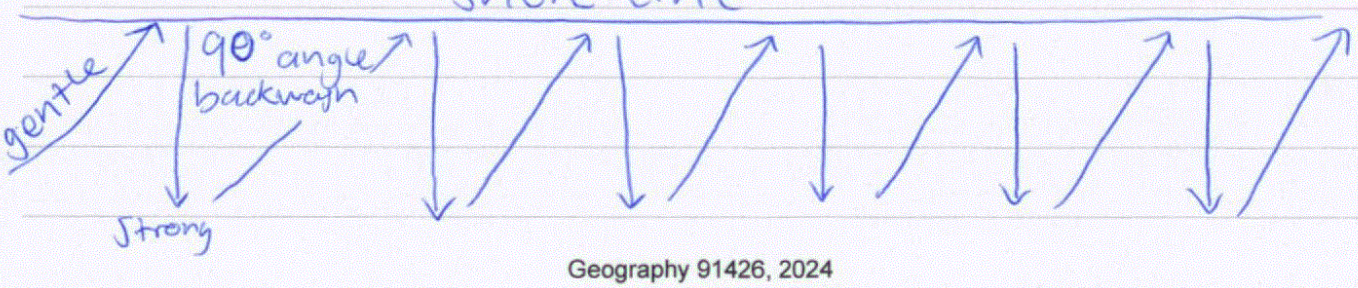
caves begin to join from either side of headland to form an arch

arch collapses and the stack is left separated from headland.



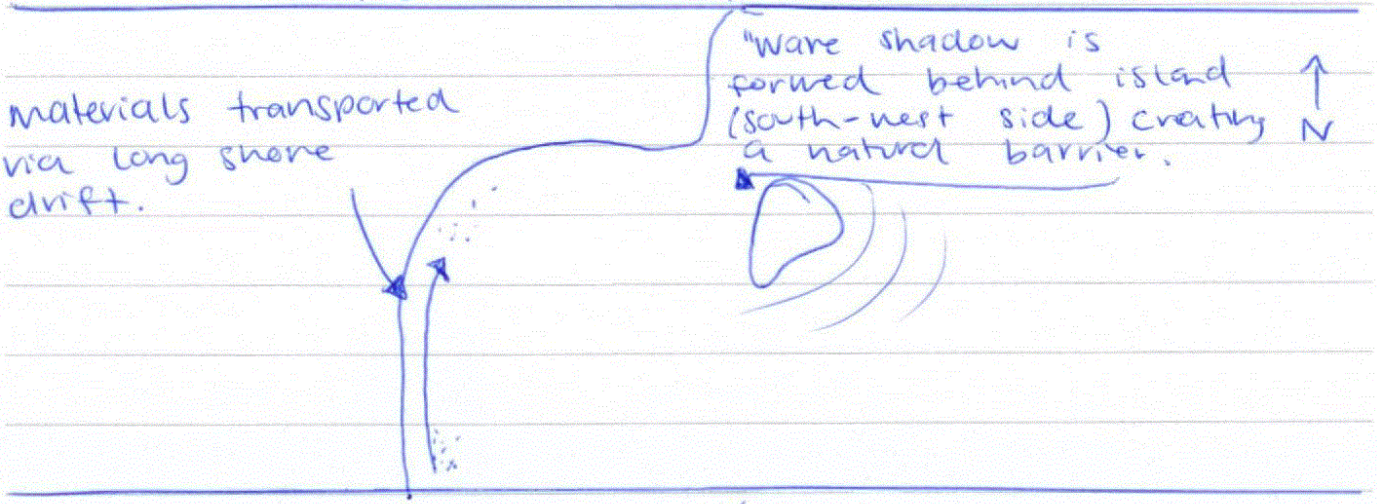

Several arches have existed prior but have been eroded down to stumps below the sea level

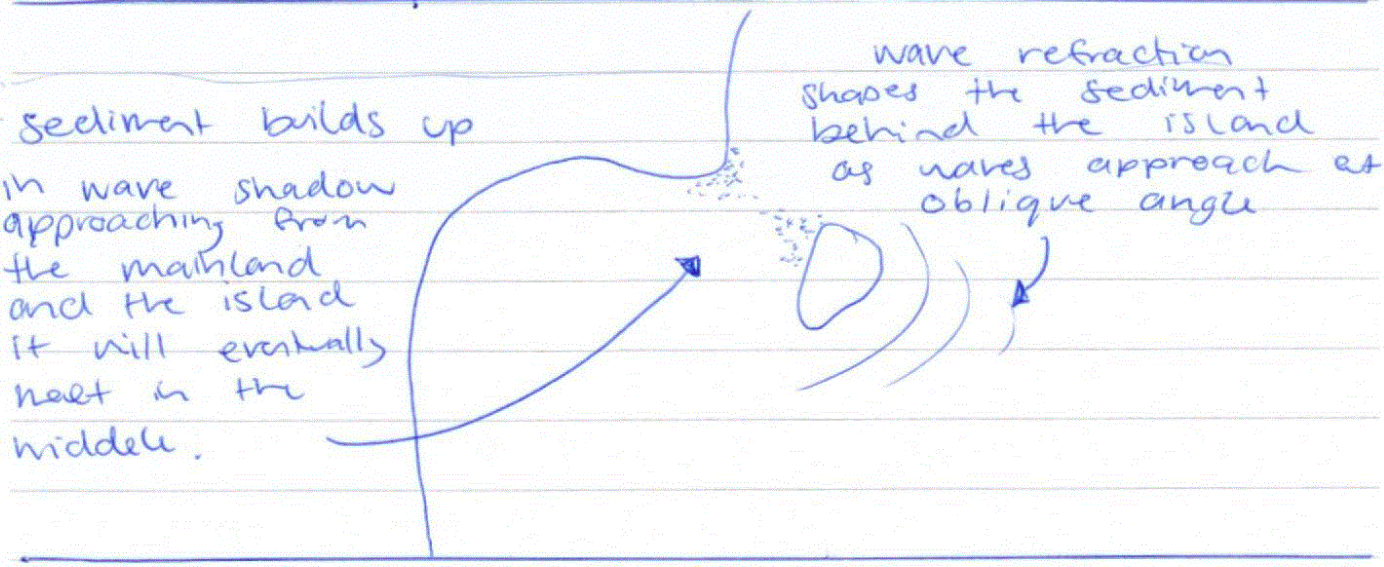
As ~~seen~~ shown in the diagram "Formation of a stack" the interacting hydrological processes have affected the geomorphological features at Te-Kauwae-a-maui, thus causing extensive erosion over the past 100,000 years. As sediment is eroded these materials are transported via Long shore drift (LSD) down the coast to Mahia. This transportation of sediment includs pedological processes (sand), as sediment is transported. This transportation is also affected by the presence of river-mouths joining the ocean such as the Ngaruroro river and Tukituki river that carry sediment from the Kaweka and Ruahine Ranges. As sediment is being transported, due to interaction with the environment such as rivers and estuaries, spits and bars may form as sediment builds up and accumulates in certain areas. Along the Marine Parade beach at Napier the waves are destructive and plunging, leading to a higher slope angle at the shore above 10°. Here the waves have a gentle surg and strong backwash, as depicted below.

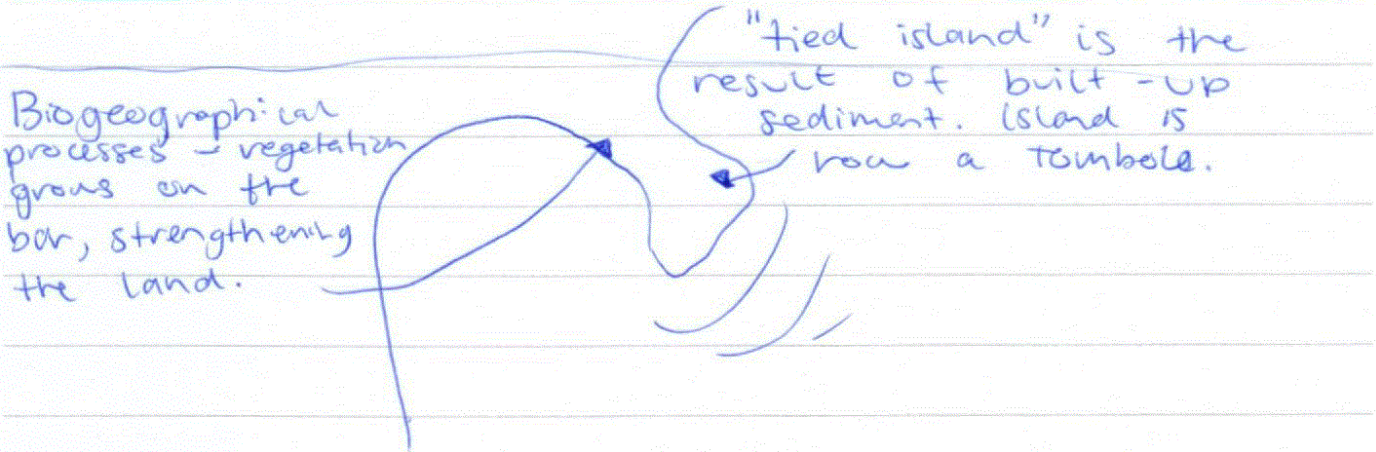


Finally, as the sediment has been transported by the means of LSD, the sediment settles in the "wave shadow" that was provided by Mahia island. Over the hundreds of thousands of years that materials have been deposited here a bar has formed, tieing Mahia island to the mainland.

Formation of a Tombolo:



As shown on the diagram "Formation of a Tombolo", the interacting features of the HBCE have occurred throughout the environment, resulting in the formation of the Mahia Tombolo. The interaction of these processes throughout the HBCE has influenced the creation of a unique environment throughout the space of the Hawkes Bay Coast.

# Achievement

**Subject:** Geography

**Standard:** 91426

**Total score:** 04

| Grade score | Marker commentary |
|---|---|
| A4 | The environment and interacting natural processes are well described, including some diagrams and supporting case study evidence. However, there is not enough detailed case study evidence or explanation of interactions for the answer to gain Merit. |