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3

91426



914260



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Level 3 Geography, 2018

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

9.30 a.m. Friday 23 November 2018
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.

Merit

TOTAL

6

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INSTRUCTIONS

Answer the question below. Your answer must relate to a **New Zealand geographic environment** that you have studied, and the key **interacting natural processes** that shape it.

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

Integrate comprehensive supporting case study evidence into your written response to part (b). This may include diagram(s) and/or map(s), and you should also refer, where relevant, to your response to part (a).

QUESTION

- (a) Draw a diagram(s) and/or map(s) to explain how two named natural processes interact in your chosen New Zealand geographic environment (see page 4).
- (b) Comprehensively analyse how interacting natural processes create spatial variations within your chosen New Zealand geographic environment (see page 5).

New Zealand geographic environment: New Brighton Beach Sand Dunes ✓

Interacting natural processes that shape this environment:

Natural process (1): Saltation ✓

Natural process (2): Longshore Drift ✓

PLANNING (OPTIONAL)

Longshore Drift - The process of waves coming in at an oblique angle and returning 90° to the shore.

Saltation - The process of sediment being ^{transported} ~~carried by~~ to form a ~~bar~~.

320,000 cubic tonnes of sediment from Waimakiriri
18km stretch from Waimakiriri

Constructive Waves.

Destructive Waves

- High crash down
- Short wave periods

Draw a diagram(s) and/or map(s) to explain how two natural processes interact in your chosen New Zealand geographic environment.

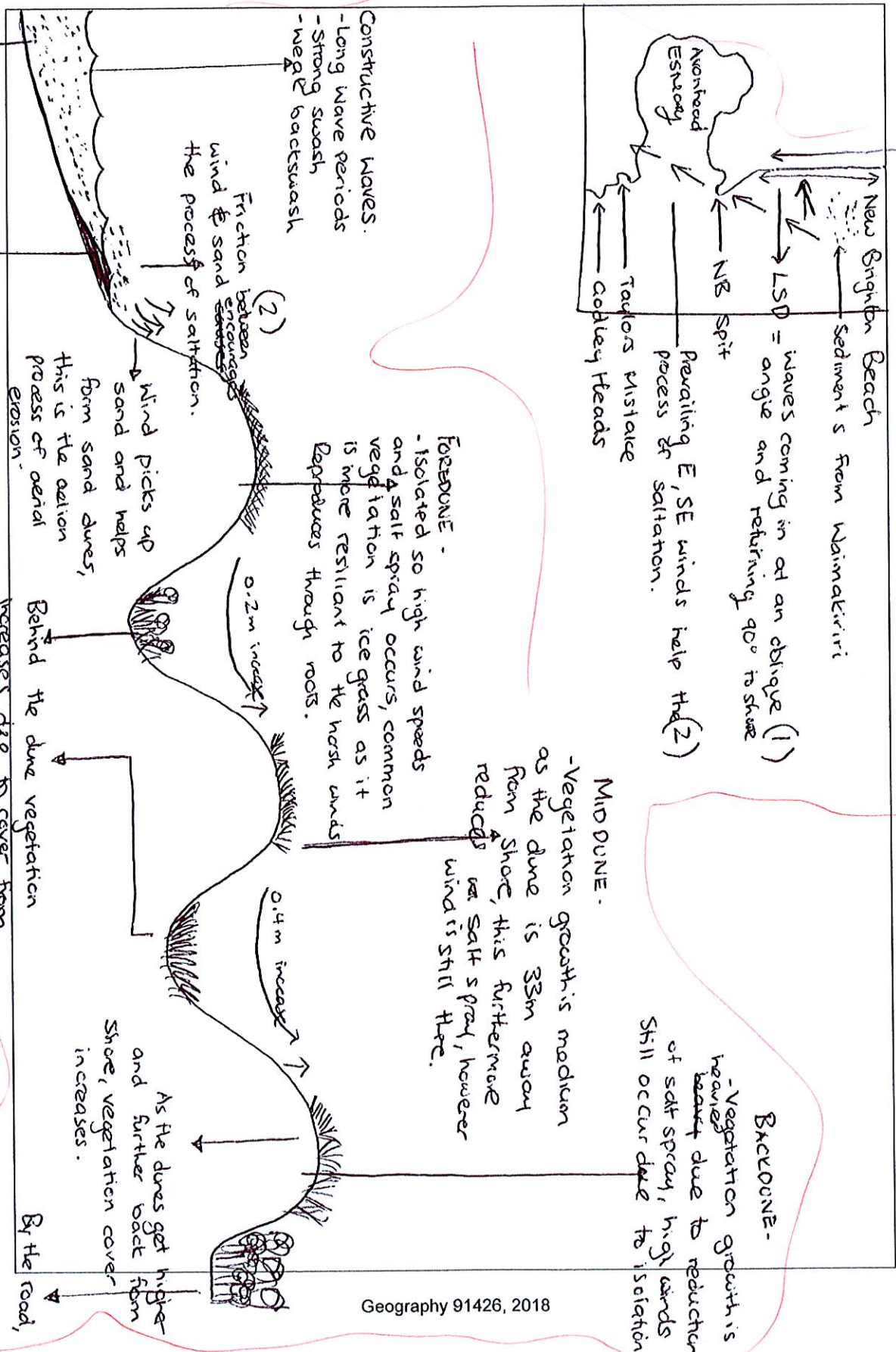
Natural process (1): Longshore Drift

Natural process (2): Saltation

LSD occurs 320,000 metric tonnes of sediment is dropped on beach annually.

(1) Sediments from Maimakiriri, saltation high winds and sea salt spray means a lack of vegetation.

No nutrients in soil, harsh



- (b) Comprehensively analyse how interacting natural processes create spatial variations within your chosen New Zealand geographic environment.

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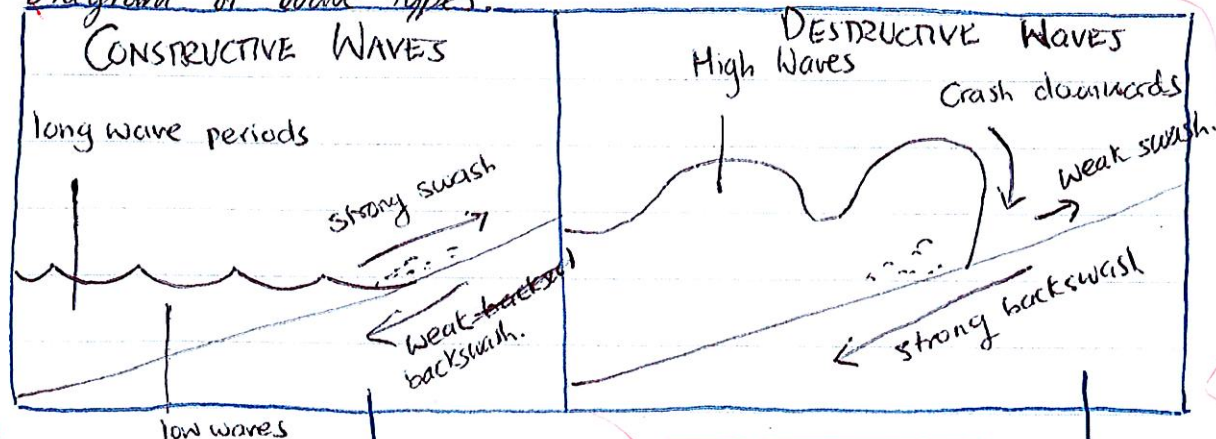
Begin your written answer here, integrating comprehensive supporting case study evidence about your geographic environment and the interacting natural processes that shape it.

Refer to any diagram(s) and/or map(s) included within your written answer, as well as those in part (a) if they are relevant.

The New Brighton Sand Dunes are ~~the~~ a New Zealand Geographic Environment which are formed by the natural process of saltation and Long shore Drift. Saltation is the process of sediments being transported, in this case through action erosion. Longshore Drift is the process of waves coming in at an oblique angle and returning 90° to the shore, these two processes interact with other factors to ~~produce~~ form the sand dunes at New Brighton Beach, and additional spatial variations.

Firstly, longshore drift is the process of waves coming in at an oblique angle and returning 90° to the shore. During this process, the waves carry sediments from the Waimakiriri River and drop it on the beach front. Due to there being constructive waves at New Brighton beach, this process is efficient in the ~~production~~ ^{formation} of the sand dunes. The sediment travels one meter per minute during this process.

Diagram of Wave types:



Constantly increasing
the beach

destroying the beach.

Constructive waves have the characteristics of:

- low waves
- weak backswash
- strong swash
- constantly increasing / creating the beach
- long wave periods

The strong swash and weak backswash means the sediment will get pushed up the shore but won't return back with the backswash due to it being weak. Additionally, the long wave periods allow for the sand to grip to the shore, meaning that the backswash further has little effect. ~~due to~~
at New Brighton Beach

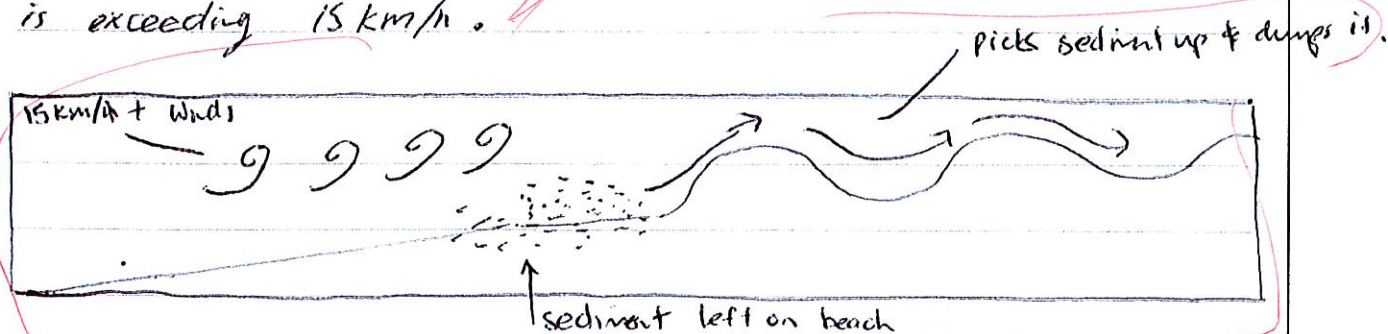
The constructive waves are the opposite of the waves at a beach further south, Taylors Mistake. Taylors Mistake has destructive waves which are destroying the beach overtime. Hence why the sand dunes are smaller
process

Through the interaction of longshore drift & interacting with constructive waves, ~~the formation of the sand dunes are made~~ the sediment ~~is~~ for the sand dunes are available. The Waimakiri dumps 320,000 metric tonnes of sediments on New Brighton Beach annually, which is through this relationship of Longshore drift and constructive waves. ~~There~~ This relationship ~~addition~~ then interacts with Saltation and Aclion erosion to form the sand dunes.

The sand dune is then made through ~~the~~ the process of saltation and aclion erosion ~~which~~ by the sediment on the shore being dumped or transported from the wind and ~~sediment~~ to form the

sand dune. This process can only occur if the wind speed is exceeding 15 km/h.

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Through the relationship between Longshore Drift and Constructive Waves, and Saltation and action erosion, the geographic feature of sand dunes at New Brighton Beach is formed. ~~Longshore drift~~ and The process of Longshore Drift ~~and~~ interacts with constructive waves to retrieve the sediment required from the Waimakiri. Then Saltation interacts with Action Erosion to ~~form~~ form the dune.

There is a large quantity of spatial variation which occurs on the foredune. Generally, the further ~~back~~ distance from the shore, the increase in vegetation.

Firstly, at the beach front, there is ~~no vegetation due to the~~ ~~no nutrients in the soil~~ rough environment caused by a number of factors. The rough high winds, salt spray and lack of nutrients in the sand means that no organism would be able to survive. Hence why the shore, which stretches 18km, has no vegetation at all.

After the ~~shore~~ beach front is the foredune. The foredune has harsh high wind speeds due to its isolation. It still has the effects of salt spray, however there is an increase in nutrients as soil appears. Vegetation growth is small here, with ice grass.

being the most common. Ice grass reproduces ~~a~~ underground through its roots, and doesn't grow above 0.3 m. This means the harsh winds have little effect due to ~~the~~ it being low to its roots. //

Between each of the three dunes located at New Brighton Beach, is ~~the~~ a dip where vegetation cover is medium. Ice grass and ~~totoeiu~~ ~~flax~~ is common here, ~~there~~ There is a decrease in wind due to the shelter behind the dune. This occurs ~~in~~ behind the foredune and middune. //

On the middune, vegetation growth is medium due to its decrease in salt spray from being 33m away from the shore. There is a 0.2m height increase from the fore-dune to the ~~middune~~ ^{middune}. However, the increase in height isolates ~~the~~ the vegetation, hence why ice grass is still common. //

Again, behind the middune is ~~totoeiu~~ and ice grass, just like the foredune due to its shelter from the ~~wind~~ wind. //

From ~~Between~~ the middune and the backdune there is an additional 0.1m increase. There is little salt spray from the 38m distance from the shore. High winds occur, however ice grass is the heaviest of the three dunes. There is additional growth of other smaller plants but nothing major. //

Now Behind the backdune there is a heavy vegetation cover due to there being large protection from the backdune. A new form of vegetation appears, called Pahiūtāruwi, which stands //

Extra space if required.

Write the question number(s) if applicable.

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QUESTION
NUMBER

(2) to grow on average 1.2m tall. Ice grass is very common ~~due to~~ and heavy due to the protection of the dunes and the pohūfani. 4

As I have described the variation between the dunes. It is obvious the further inland the dunes go back, the larger the vegetation cover. This shows that there is spatial variation at the sand dunes at New Brighton Beach. This occurs because of the process of longshore drift and saltation. 11

Merit Exemplar 2018

Subject	Geography		Standard	91426	Total score	6
Q	Grade score	Annotation				
	M6	<p>The diagram is detailed with annotations that explain the interaction between two processes.</p> <p>There is detailed supporting case study evidence within the written answer, but there could be more and it could be used more throughout the answer. If there was more evidence, then that would have helped to support the candidate gaining an E7 or E8.</p> <p>Analysis is detailed but lacks insight. For example, the candidate states that certain processes form dunes but doesn't elaborate on the process of dune formation. They focus on longshore drift, sediment supply and Aeolian processes but don't have the insight to discuss the importance of vegetative/biological processes in dune formation (although they do discuss vegetation as part of their spatial variation). This lack of insight within the answer limits it from gaining an E7 or E8.</p>				