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91240



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Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 2 Geography 2024

91240 Demonstrate geographic understanding of a large natural environment

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate geographic understanding of a large natural environment.	Demonstrate in-depth geographic understanding of a large natural environment.	Demonstrate comprehensive geographic understanding of a large natural 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 BOTH parts of 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 2–8 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.

Excellence

TOTAL 08

INSTRUCTIONS

Name the large natural environment you have studied this year. The environment can be in New Zealand or overseas and can be at a national, regional, or continental scale:

Tongareva Natural Environment

Refer to this environment when answering both parts of the question.

Integrate case study evidence, as well as geographic terminology and concepts, into your answers.

Geographic concepts you may choose to use in your answer include:

Environments

May be natural and/or cultural. They have particular characteristics and features, which can be the result of natural and/or cultural processes.

Location

Where something is found. Location can be an advantage or a constraint. Location can be described in absolute or relative terms.

Perspectives

Ways of seeing the world that help explain differences in decisions about, responses to, and interactions with environments. Perspectives are bodies of thought, theories, or world views that shape people's values and have built up over time.

Change

Involves any alteration to the natural or cultural environment. Change can be spatial and/or temporal. Change is a normal process in both natural and cultural environments. It occurs at varying rates, at different times, and in different places.

Interaction

Involves elements of an environment affecting each other and being linked together. Interaction incorporates movement, flows, connections, links, and interrelationships, which work together and may be one- or two-way interactions. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

QUESTION

- (a) Explain how your chosen large natural environment is formed and changes over time.

You may include diagrams and maps in your answer.

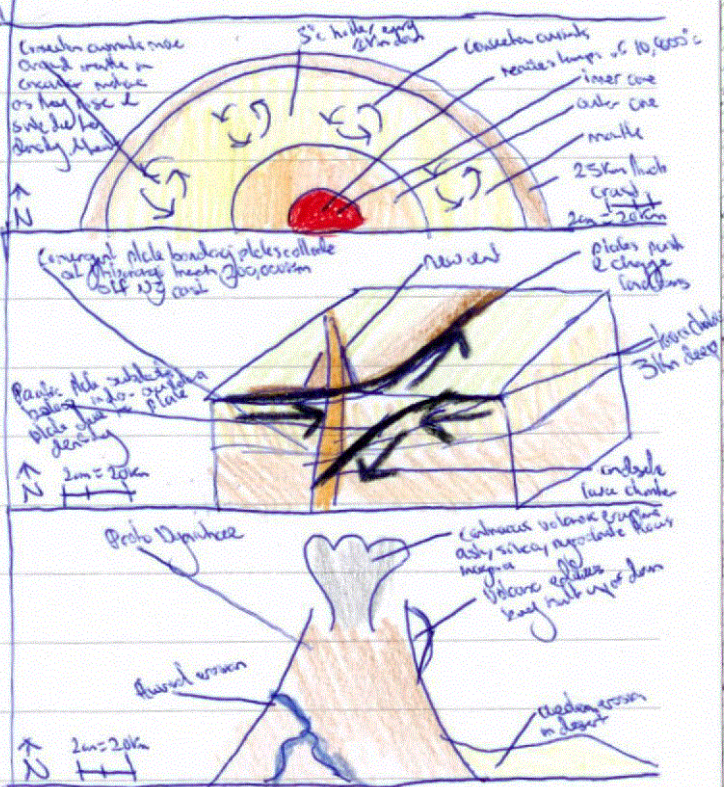
PLANNING

- Zone of accumulation, ~~atmosphere~~, ~~atmosphere~~
- 3°
- $10^{\circ} 800^{\circ}$
- 3° per 1 Km
- 25 Km thick
- 25,600 tamps
- 260,000 100,000 2,500
- 1800a occurs
- density & water content
- 3cm per year

The Tongareva Natural Environment is located on the Central North island in the central plateau in the Manawatu region. Over time the TNE for Tongareva Natural Environment has observed significant changes to its 110 Km² region which we can observe through 3 main time periods being Time period 1 of proto Ngauruhoe 260,000 years ago, Time period 2 of Ice age 100,000 years ago & Time period 3 present day of 2,500 years ago. In each of these significant time periods key volatile different processes to form & change the land through evolution such as earth building processes, glacial & denudation processes & erosion. In this essay I will discuss the 3 different distinct time periods in the TNE & the interaction of processes occurring to form & change these time periods & the environment.

Time period 1 is on proto Ngauruhoe 260,000 years ago & proto Ngauruhoe was a parasitic andesite volcano in the TNE at the time which sits where Tongareva (166m) & Ngauruhoe (2291m) currently sit today. Proto Ngauruhoe was both built up & destroyed through earth building processes which is the interaction between convection currents, tectonic processes & volcanic processes. Firstly convection currents occur in the mantle where the ~~the~~ magma gets 3° .

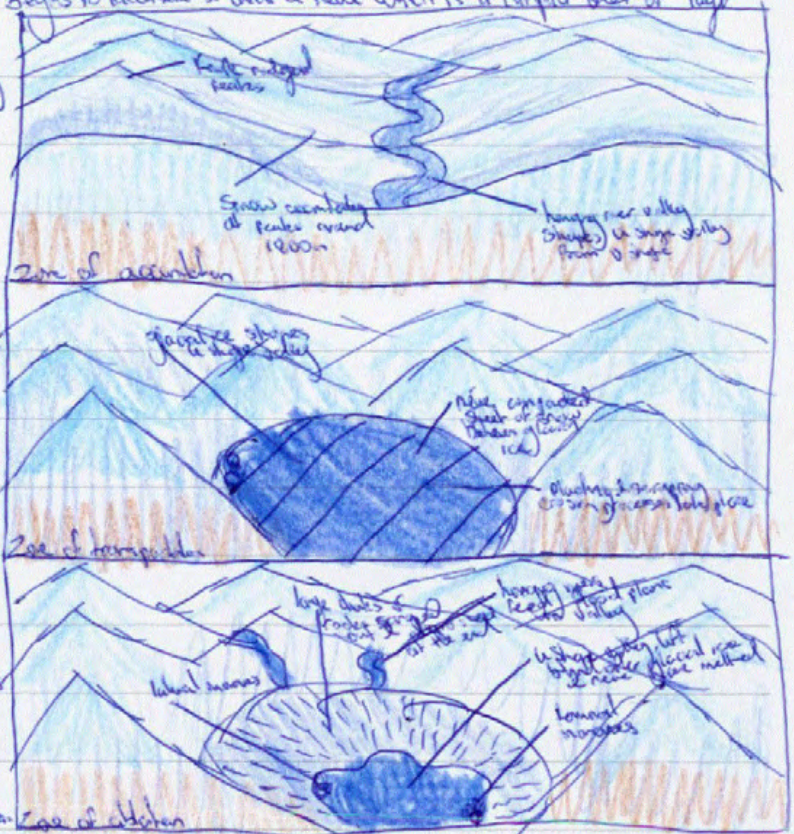
hotter for every 1 km down you go. There is 4 layers to earth being the inner core, outer core, mantle & the crust. The inner core reaches temperatures up to $10,800^{\circ}\text{C}$. This hot magma from the core therefore becomes lighter & rises up into the mantle as it rises it becomes denser & cooler again & begins to sink back down into the core. This process happens continuously causing magma to move around the mantle in circular motions known as convection currents. Convection currents then interact with tectonic processes as the movement in the mantle consequently causes the plates & they move of the 25 km thick crust to move as well being the Pacific & Indo-Australian tectonic plates. The Pacific & Indo-Australian plates have a convergent plate boundary where they subduct each other as they slowly move towards each other at a slow rate of 3 cm per year. The plates meet at the Hikurangi trench 200,000 km off the coast of NZ & there the Pacific plate subducts beneath the Indo-Australian plate due to differences in ~~plate~~ plate buoyancy & this ultimately creates movement & changes in the shape of the land, interacting with volcanic processes. As the Pacific plate subducts beneath the Indo-Australian plate it begins to dip into the crust & mantle which causes high temperatures & due to the high water content of the Pacific plate it begins to partially melt & creates Andesitic lava. The plate tectonics change the shape of the land to either destroy or build up a new volcano & the andesitic lava produced is released in the form of a andesitic eruption these continuous eruptions occur to build up or destroy volcanic edifices & in the case of proto Ngauruhoe I was to destroy with continuous eruption of ash, silica, magma & pyroclastic flows.



Overall I can see how in the period 1 of proto Ngauruhoe earth building processes through convection currents, tectonic processes & volcanic processes interact to change the environment & change the TNE from the period 1 of proto Ngauruhoe 200,000 years ago to the period 2 of ice age 100,000 years ago.

Time period 2 takes place 100,000 years ago in the ice age after proto Ngauruhoe had been destroyed & the period 2 of the ice age uses glaciation & denudation processes such as erosion & plucking & scraping in order to change the shape of the TNE outline & form characteristics that still stand today. In the ice age time period of 100,000 years ago there is 3 main zones where the processes take place being the zone of accumulation, zone of ~~the~~ transportation & the zone of ablation. After proto Ngauruhoe erupted the TNE was sent into a ice age where they observed temperatures

3°C colder than temperatures today. The zone of accumulation sits at around 1800m elevation & is the region near the top of the mountains where snow accumulates. In this zone the snow begins to accumulate & create a névé which is a compact sheet or layer between the snow & glacial ice which will eventually turn into glacial ice. This névé is shaped rugged & in a cirque or bowl shape & when it has formed gravity begins to take place in the zone of transportation. In the zone of transportation gravity begins to drag the glacial ice down hill & this is where plucking & scraping processes take place as they ice plucks out large chunks of rock & then scrapes it. To create a smooth U-shape valley as it moves down slope & this U-shape valley as a result of plucking & scraping can still be seen today from the Dark Shire case as the Mangajokepe Valley. Once the glacial ice has moved down slope & out of the zone of transportation



Please turn over ➤

- (b) Explain how one person or group's perception of your chosen large natural environment has changed over time.

PLANNING

- DOC
- environmental, political, cultural
- Healer beetle 1996
- Pina Corina 1990
- April 1st 1987
- National parks act 1980
- Conservation act 17-18
- Str. field gardala operation 2.5 mil 19
- bike track shut 2018
- 120,000 tourist annually
- 33,000 ft

The Tongareva Natural Environment or TNE has multiple groups that have continually intruded within the environment. The TNE is located in the central North island, in the central plateau in the Morairua region & it covers around 110 km² of land. Over time many groups have intruded with the environment & during this time their perspectives & perception of the TNE has changed over time. The four main groups concerned are DOC, Ngelutukuhua, Farming & Farming & Business operators yet this essay will specifically discuss how DOC as one individual group's perspective & perception has changed on the TNE over time.

DOC or the Department of Conservation is a government organization created on April 1st 1987 with the purpose of fostering & conserving & preserving the natural environment. DOC initially had a conservation perspective as their sole focus was on conserving the environment & DOC used a western model of conservation where they did not factor in other groups or entities opinions which made groups such as Ngelutukuhua mad initially. DOC carried out many initiatives in the 1990s due to this environmental perspective such as the control of the invasive species of Pina Corina in 1990 as it began to pose as a threat to native flora encroaching into native areas & DOC's introduction of the Healer Beetle in 1996 was as one of two ways to attempt

to control the spread of invasive, threatening & non-native species to NZ native flora. The introduction of the hedgehogs was the way of biologically controlling & introducing a predator in order to eliminate & reduce the threat of these non-native & invasive species while the other way was by eliminating all the threats of those species. Such as Pine Girdler & Flea beetle which was introduced to the NZE region in the early 1800s when European settlers came over from Scotland. DOC also used both 1080 & traps currently throughout 33,000H of the NZE as a method of pest control & an attempt to eradicate possums with a goal of having a possum free area in those 33,000H by 2040. These initiatives carried out by DOC showcase their clear & strong environmental perspective with a sole focus on conservation & preservation yet in the 1990s they started to additionally adopt a political perspective of a political perspective of the NZE that matched with their initial environmental perspective.

~~DOC~~ DOC started to adopt a additional political perspective in the 1990s which was heavily introduced by the introduction of the National Parks Act known as the 1980 National Parks Act. This Act had 3 main principles being to 'preserve the land & historic heritage, foster recreational & tourism, limit recreational use & have a partnership with the iwi of Ngāi Tahu'. This act saw them shift into a more political perspective additionally & they had a political perspective of the land as they were now involved in more government wide based overall forestry...

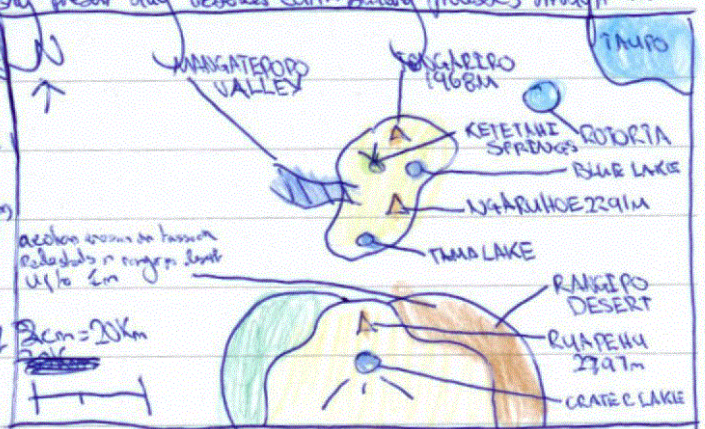
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Write the question number(s) if applicable.

QUESTION
NUMBER

1 I into the zone of ablation a U-Shape valley has been left behind & the glacial ice begins to melt depositing sediments & both lateral & terminal moraines at the bottom in the zone of ablation. The melted glacial ice looks like a flood & erosion can take place from the zone of ablation where the melted glacial ice creates hanging river valleys that cascade the slopes. Overall I can clearly see how the different glaciation & denudation processes that occur throughout time period 2 of the ice age 100,000 years ago all interact with each other to change & form the TNE ~~from~~ from time period 2 of the ice age 100,000 years ago to Time period 3 in the ice age 100,000 years ago & the present day time period 3 of 2,500 years ago & I can see how significant these processes are as they create landmarks that are still present to day.

Time period 3 takes place 2,500 years ago & is present day. In the present day time period we observe both earth building processes & ~~denudation~~ denudation processes working together & interacting at once to create & form the changed TNE that we see today. Firstly present day observes earth building processes through the orogenic eruptions that build up the 3 andesite volcanoes in the region being Ruapehu 2797m, Ngauruhoe 2291m & Tongariro 1968m. The region mainly undergoes the volcanic processes. When the Pacific plate subducts beneath the Indo-Australian plate due to the convergent plate boundary where they meet towards each other at a



slow rate of 3cm per year, meeting at the Hikurangi trench 200,000km off the NZ coast the Pacific plate subducts beneath due to the differences in plate density & when it does so the plate slips into the 25km thick crust & the mantle causing the plate to partially melt & due to the high water content in the Pacific plate it produces Andesite lava. This Andesite lava is released through the new landscape vents & they undergo continuous eruptions with lava, ash, silica & pyroclastic flows that continue work to build up the volcanic edifices or main part of the cone. These volcanic processes explain how the 3 volcanoes we observe in present day were formed but another important aspect of how the TNE was formed & changed to be how it is in present day is the Great Tongo eruption. The great Tongo eruption occurred around 25,600 years ago yet it falls under the present day time period & this eruption played a significant role in changing ~~the~~ & forming the Rangipo Desert in the TNE.

1 The Great Tongo eruption was one of the largest eruptions to ever occur & during the eruption the Andesite volcano produced large amounts of ash & silica which due to the wind direction all blew into the area of the Rangipo Desert. This led to metres thick of ash deposit falling in the Rangipo Desert therefore making the soil in the region immature & infertile & lacking any soil horizons. This immature & infertile soil being produced creates a harsh & hostile environment for vegetation growth which overall contributes to only xerophytic plants growing in the Rangipo Desert environment such as tussock, bracken & hakea as they are the only plants which can adapt to survive in the hostile environment in comparison to the Beach Forest which has a variety of vegetation species grow here as a result of the fertile & mature soil with multiple horizons. In relation to shaping the Rangipo Desert in present day Aedon erosion also occurs changing the erosion processes being used in the present day in period 3. Aedon erosion occurs where the high wind speeds of SW42° erode one side of the tussock creating large clumps of tussock pedestals observed in the desert up to 1m high. Fluvial erosion also takes place in present day in period 3 on the Andesite volcano where we see large bodies of water moving downhill & eroding away masses of land as it moves downhill forming & changing the characteristics of the TNE in the present day time period. A example of this is the Whakapapa Stream on Mount Ruapehu (1977a) or the Mangakopu Stream which leads into large floodplains at the bottom of the Manikiri. Overall I can see how both earth building processes & denudation & erosion processes all interact with each other simultaneously to create different characteristics & how & change the TNE in time period 3 of present day at 2,500 years ago.

In conclusion, when analysing the three distinct time periods of proto Wairarapa 280,000 years ago, Ice age 100,000 years ago & present day at 2,500 years ago I can clearly see that each time period carries out different processes which interact with each other to overall form & change the TNE & its characteristics over the three time periods I can see how significant these processes are as they create characteristics which I can still observe today such as the...

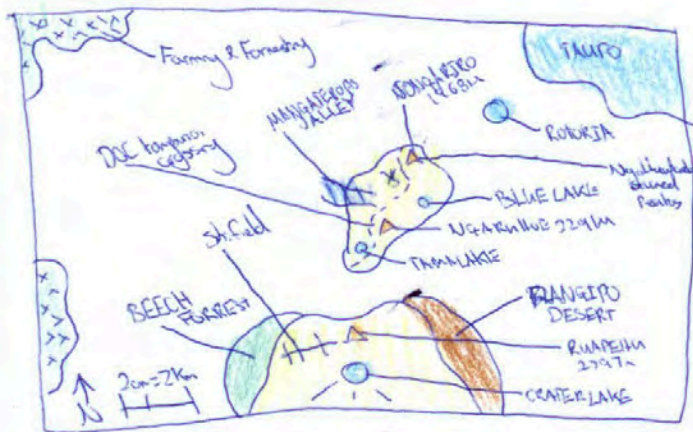
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Mangakopopo valley, the 3 volcanic volcanoes being Ruapehu 2797m, Tongariro 1968m & Ngauruhoe 2291m along with other shrublands & show how dendrochronology how the different processes cause the GNE to change over time through the 3 distinct different time periods of time period 1 prior to Ngauruhoe 260,000 years ago, Time period 2 Ice age 100,000 years ago & time period 3 Present day 2,500 years ago.

2 Land & recreational use Through this additional political perspective & their new ideal of country conservation with recreational use DOC carried out the Whakapapa Shitake ginseng expansion operation in 2019 which cost 2.5 million & DOC began to foster tourism in the GNE region where it began to observe a large increase in tourism with 20,000 tourists visiting annually & 25 huts being placed across the region by DOC in order to accommodate for this. At this time DOC had a more balanced perspective on the GNE but they still had a weak partnership with the iwi of Ngaituhakura, carrying out procedures & operating against their beliefs & values causing them to feel their shifted more recently when DOC lastly adopted a additional cultural perspective & perception of the GNE as well.

DOC shifted their views again recently to adopt more of a cultural perspective & cultural perception of the land additional ~~in~~ which interact with their other perspectives of environmental & political still. In 2017-18 DOC introduced the National parks consultation act where DOC must consult & ask for the iwi of Ngaituhakura permission before making any plans or carrying out any operations in the GNE land. This act demonstrates the respect from DOC for Ngaituhakura & their land in the GNE as they culture to allow them to hold as guardians of the land & make use of their kaitiaki. As a result of this new land partnership under DOC's cultural perspective with Ngaituhakura they have carried out acts & initiatives such as shutting down a bike track in 2018 that would have way to soon & harm the natural environment as well as other initiatives through their partnership so that both parties have DOC & Ngaituhakura can work together to preserve the sacred land & environment.

In conclusion, I can see how DOC as the Department of Conservation as a group has had 3 distinct perspectives on the GNE that have evolved & changed overtime going from their initial state environmental perspective & focus on preservation & conservation to adopting a additional political perspective which allowed them to foster recreational use & lastly adopt a additional cultural perspective to form a partnership with Ngaituhakura so that they can both preserve & have the land. DOC's perception of the land has changed overtime with its changing perspectives, yet each perspectives interact with each other in order to create a better GNE overall for all parties concerned.



Excellence

Subject: Geography

Standard: 91240

Total score: 08

Grade score	Marker commentary
E8	<p>This response seamlessly incorporates detailed annotated diagrams, using comprehensive explanations and clearly applying geographic concepts.</p> <p>It addresses the formation of the TNE (Tongariro Natural Environment) in distinct stages. Each stage is explained using comprehensive evidence. The DOC's perception changes over time are also comprehensively addressed.</p> <p>Overall, insight is shown and geographic terminology effectively used to support ideas.</p>