

No part of the candidate evidence in this exemplar material may be presented in an external assessment for the purpose of gaining credits towards an NCEA qualification.

2

91243



912430



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 2 Geography, 2018

### 91243 Apply geography concepts and skills to demonstrate understanding of a given environment

2.00 p.m. Thursday 15 November 2018  
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Apply geography concepts and skills to demonstrate understanding of a given environment.	Apply geography concepts and skills with precision to demonstrate in-depth understanding of a given environment.	Apply geography concepts and skills with precision to demonstrate comprehensive understanding of a given 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 ALL parts of the question in this booklet.**

Pull out Resource Booklet 91243R from the centre of 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 2–12 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

ASSESSOR'S USE ONLY

## INSTRUCTIONS

In this paper, you are to explain how interaction between the characteristics or features of Bhutan's natural and cultural environments contributes to the country's sustainability.

Refer to the resource booklet before beginning your answer to the question in this booklet.

Parts (a), (b), (c) and their related resources should enable you to gain an understanding of Bhutan, so that in part (d) you can explain how interaction between the characteristics or features of Bhutan's natural and cultural environments contributes to the country's sustainability.

Space is provided on page 8 to help you plan your answer to (d).

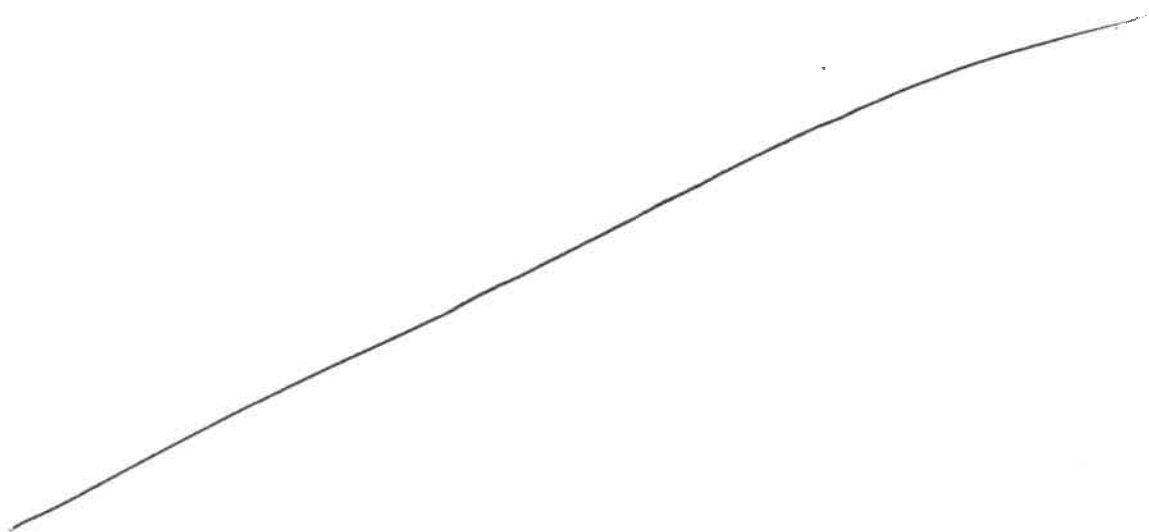
## QUESTION

### (a) Photograph interpretation and précis map drawing

Refer to **Resource A** on pages 6 and 7 of the resource booklet.

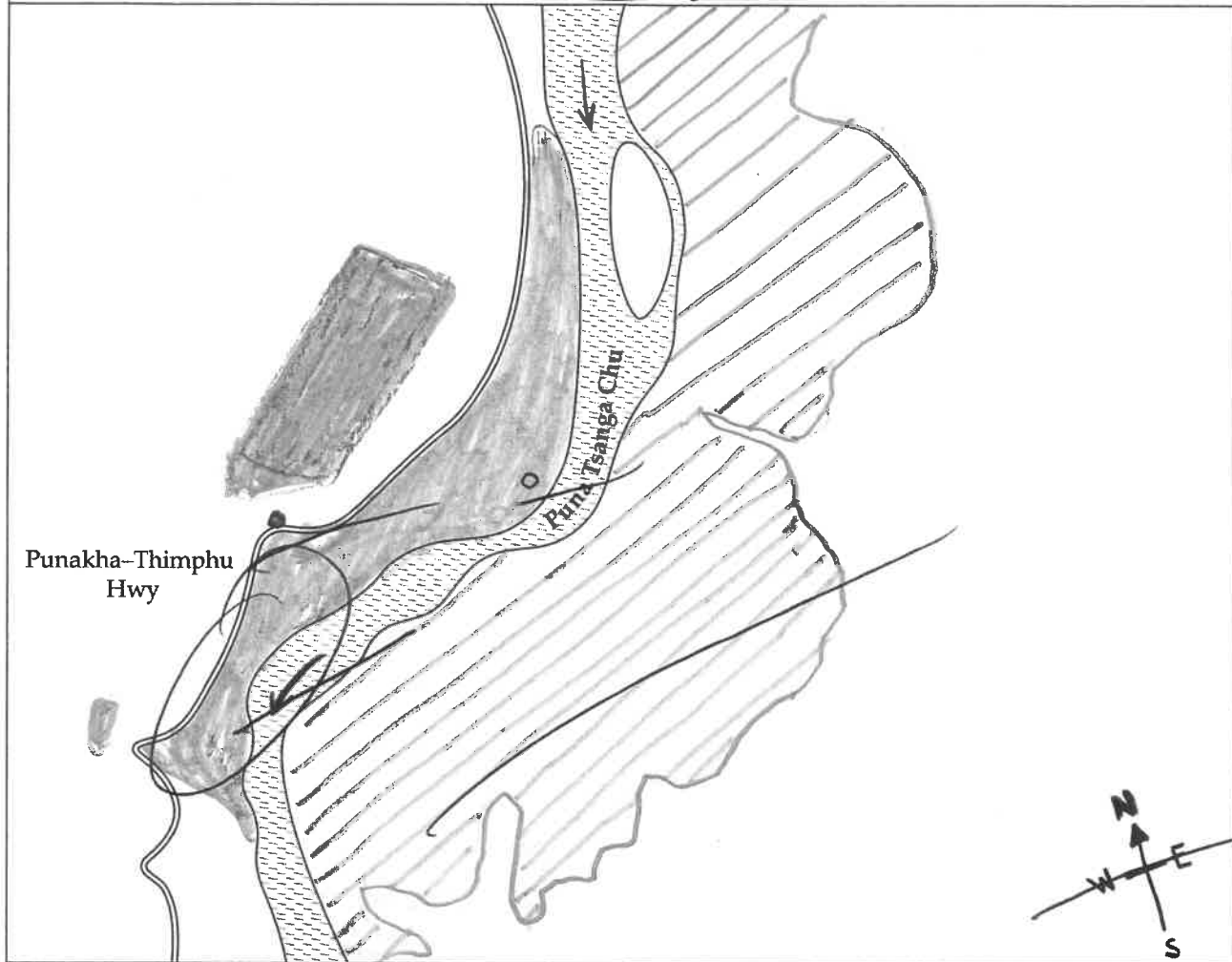
In the space on the opposite page, complete a précis map of the satellite photograph shown in Figure 1, by:

- (i) Locating and labelling the following features:
  - The area of agriculture (terraced rice fields) on the eastern side of the Puna Tsanga Chu river
  - The main built-up area of buildings in Khuruthang village.
- (ii) Showing the location of the following features:
  - The fuel station in Khuruthang village ●
  - The Damchen Resort. ○
- (iii) Showing the direction of the flow of the Puna Tsanga Chu river, using an arrow. →
- (iv) Providing the map with an appropriate scale, using the distance from the Damchen Resort to the fuel station in Khuruthang (400 metres).
- (v) Giving the map a title and appropriate key, and indicating the compass direction north.








Title: ~~BH~~ Bhutan Environment - Khoruthang village, Punakha

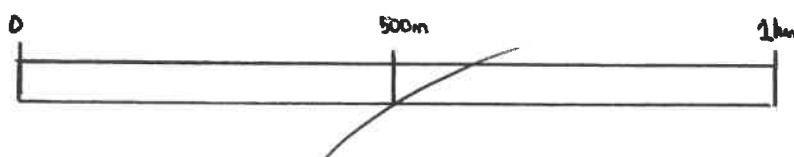
ASSESSOR'S  
USE ONLY



Key:

-  = area of agriculture (terraced rice fields) on eastern side of river
-  = main area of buildings in Khoruthang village
-  = petrol station
-  = Danchen Resort
-  = direction of the river

SCALE



## (b) Diagram construction

Refer to **Resource B** on page 8 of the resource booklet.

- (i) Using information from Figure 7, complete the diagram below to explain the **dry winter monsoon winds** in the same way that the wet summer monsoon winds are explained in Figure 6.

The position of the sun in winter has been shown.

You need to show the location and direction of the winds, other features, and complete a key, including annotation notes.

**Dry winter winds – October to April**

**Key:**

- Sun and sun's radiation
- warm air rising (heated by sun)
- cool air
- wind

- ① In the winter, the sun is over the Bay of Bengal
- ② The sun heats the ocean, causing the air above it to be heated and rise. This results in a low pressure zone over the Bay of Bengal
- ③ As the air over the Tibet desert is cold and heavy, it blows from the desert towards the low-pressure zone in the Bay of Bengal.
- ④ The wind passes ~~overhead~~ over the Himalayan mountains, and is cold and dry when it reaches Bhutan.

- (ii) Explain why there is temporal (seasonal) variation in the monsoon winds, and how this affects rainfall in Bhutan.

ASSESSOR'S  
USE ONLY

In your answer, refer to specific information provided about the summer and winter monsoons, as well as the geographic concept of **Processes** on page 2 of the resource booklet.

During the Summer, the Sun is positioned over the <sup>Tibet</sup> ~~Tibet~~ Desert which causes the air over the desert to heat + rise creating a low pressure zone ~~over the desert~~ in Tibet. This results in moist cooler air over the Bay of Bengal being sucked toward the low pressure zone, which condenses as it passes ~~air~~ over the Himalayas resulting in heavy rainfall in Bhutan. between April and September.

During the winter however the sun is positioned over the Bay of Bengal creating a low pressure zone there instead. The air over the Tibet desert is cold and heavy and blows towards the low pressure zone in the Bay of Bengal. ~~Thus~~ The wind ~~is~~ passes over the Himalayan mountains and is cold and dry when it reaches Bhutan. The seasonal variation is due to the positioning of the sun and therefore the ~~different air~~ ~~being~~ different air which is creating the winds being moist or dry. The moist air in summer creates heavy rainfall as it condenses over the Himalayan mountains where as the dry air in winter creates dry winds ~~and no rainfall in Bhutan~~ over Bhutan.

## (c) Graph interpretation

Refer to **Resource C** on page 9 of the resource booklet.

- (i) Using specific information from Figure 8 and Figure 9, explain how Bhutan's climate affects monthly hydroelectricity production.

Bhutan's climate consists of low rainfall of approx 10-20mm of rain in Jan, Feb, Nov, Dec months in winter and low temperatures of  $-3$  to  $-4^{\circ}\text{C}$ . Then during the summer months of Jun, Jul, Aug having high rainfall up to 370mm of rain in July and high temperatures of around  $14^{\circ}\text{C}$ . This relates to the hydroelectricity production as during the low rainfall/temperature months there is low production and during the high rainfall and temperature months over summer (Jun/July/Aug/Sep) there is higher production evidently as hydroelectricity is dependant on the amount of water in the dam and more rainfall equals more water to create electricity.

- (ii) Using specific information from Figure 8 and Figure 10, explain how Bhutan's climate affects the monthly number of tourist arrivals.

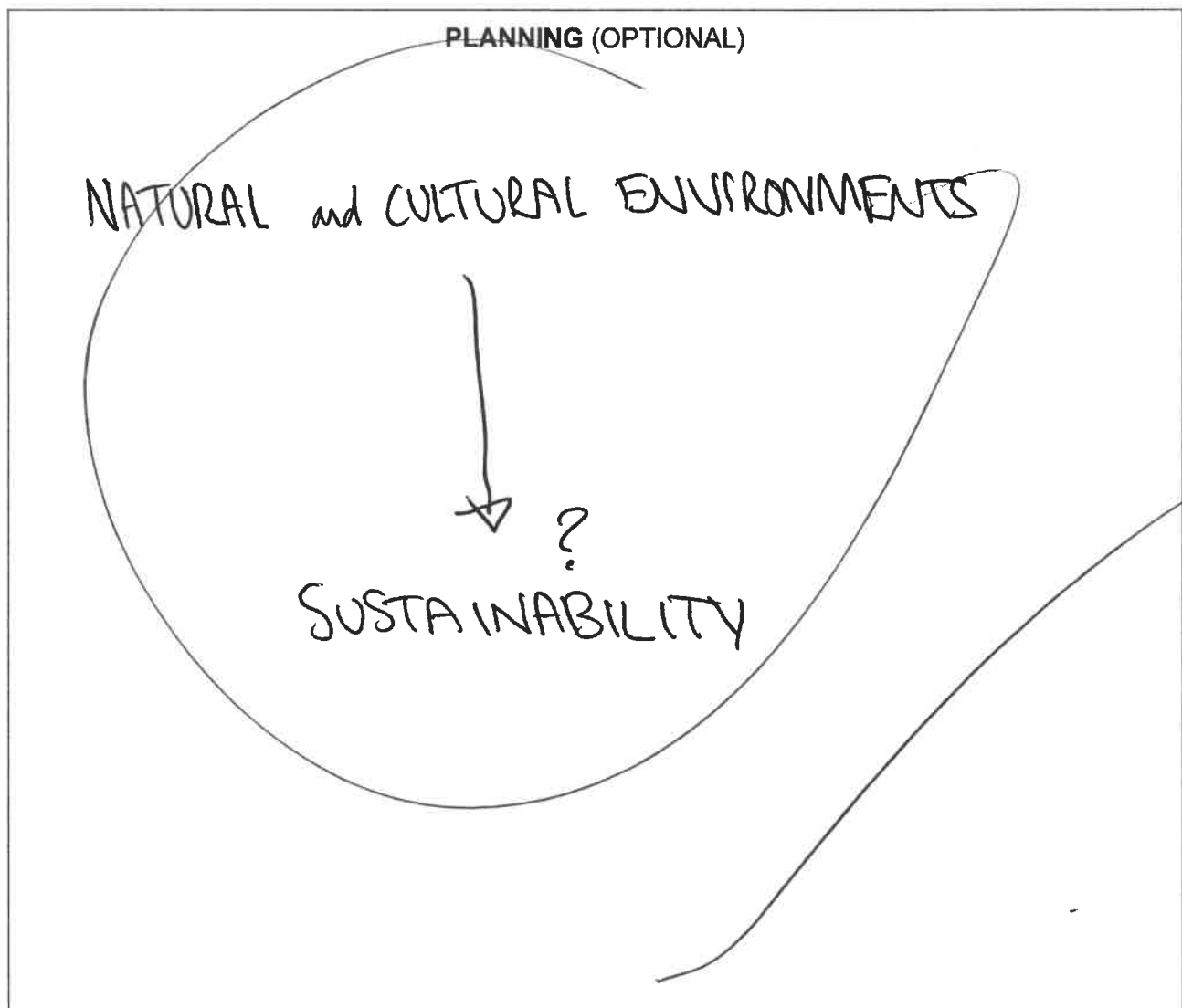
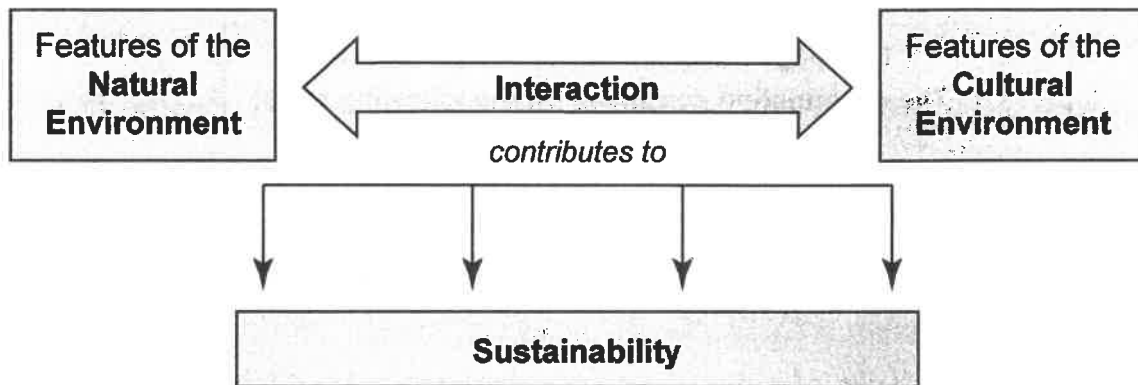
There are a larger number of tourists come in the in-between seasons time eg during the months of May, Apr and Sep, Oct, Nov as this is when the temperatures are still warm not at their lowest like in Dec, Jan where it is  $-2^{\circ}\text{C}$  to  $-3^{\circ}\text{C}$  approx and also as the rainfall is not as high being around 80mm - 100mm of rain which is the best possible weather to sight-see and experience the area, therefore the graph shows a higher number of tourists.

(d) **Bhutan and sustainability**ASSESSOR'S  
USE ONLY

Explain how interaction between the characteristics or features of Bhutan's natural and cultural environments contributes to the country's sustainability.

In your answer, refer to:

- the geographic concepts of **Environments**, **Interaction**, and **Sustainability** on page 2 of the resource booklet
- **Resource D** on pages 10 and 11 of the resource booklet, and any other resources
- specific information from your answers in parts (a), (b) and (c).



Bhutan's cultural environment based around the official ~~religion~~ religion of ~~Buddhism~~ Buddhism has led to its Constitution requiring all decisions to be sustainable (socially and economically), preserve the traditional and culture and ensure environmental conservation. The country has many natural resources, forests cover 82% of the country, there are abundant pristine water supplies, good fertile soils and irrigation and a pristine natural environment. Natural parks also cover 50% of the country's land area and the Constitution requires that 60% of the country remains in forest. They are the only country in the world that is carbon-negative which also shows how they are sustainable. Under the constitution, decisions must improve the quality of our peoples lives, be economically beneficial and also not have ~~any~~ any adverse effects on their traditions or on the environment. The country is isolated due to its mountainous terrain which has been an advantage as the country's natural resources remain largely intact as they have avoided other haphazard development decisions made in other Asian countries. Their cultural environment interacts with the natural environment to create sustainability also as most Bhutanese people are still involved in traditional agriculture. As well as this the country's economy is primarily based off of harnessing renewable hydroelectric power, currently they produce 1500MW (88% exported to India) but although they have the capacity to generate another 30 000 MW of electricity the government is proceeding cautiously to ensure they minimise the environmental impact. They also have a thriving tourism industry which major attractions are its unspoiled natural environment and traditional culture. The government is focussed on low-environmental-impact tourism also showing how the cultural and natural environments interact ~~causing~~ sustainably. Because of their sound economy, the government has subsidised the use of electric cars which



produce fewer harmful emissions, including air pollutants and greenhouse gases, and are fuelled by a renewable resource making them very sustainable for the environment. They also have plans for all farming to be organic by 2020, abolishing all manufactured chemicals including environmentally harmful fertilizers and pesticides. All of these sustainable ideas contribute to sustaining the country's pristine natural environment including the Himalayan mountains, rivers such as the Rupa Tsanga Chu River and all of the forests and agricultural land.

## Merit Exemplar 2018

Subject	Geography		Standard	91243	Total score	6
Q	Grade score	Annotation				
	M6	<p>The paper demonstrates the use of geographic skills and conventions to a high level of accuracy, and a detailed understanding of geographic concepts.</p> <p>The features shown on the map in part (a) have used appropriate symbols and key, and accuracy is shown in most of their locations (although there is some inaccuracy in the main built-up area) and the north direction and scale are accurate. The diagram in part (b) shows use of appropriate conventions in showing the key features and has a high level of accuracy in both their positioning and explanation. In interpretation of the graphs in part (c), conventions have been used to interpret the graph and there is a high level of accuracy using specific information and recognising that there are "shoulder" autumn and spring tourist seasons.</p> <p>In explaining the temporal variation in the monsoon winds in part (b), a detailed understanding of temporal variations is given, but this is not explicitly related to the concept of "process" to thoroughly explain the concept. The response is supported by detailed explanation and a range of specific information.</p> <p>In explaining the sustainability of Bhutan in part (d), the response demonstrates an understanding of the concepts of environment, interaction and sustainability. The concepts are applied although not fully explained (e.g. <i>sustainability involves adopting ways of thinking ... that ... allow societies ... to meet their needs and aspirations without preventing future generations</i>), has detailed explanation and uses a wide range of specific information.</p>				