Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel Level 3 GCE

Centre Number | Candidate Number

Tuesday 12 May 2020

Afternoon (Time: 1 hour 45 minutes) | Paper Reference **8GE0/01**

Geography

Advanced Subsidiary
Paper 1: Dynamic Landscapes

You must have:
Resource Booklet (enclosed)
Calculator, ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer Question 1 in Section A **and EITHER** Section B **OR** Section C.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators may be used.
- Any **calculations** must show **all** stages of **working out** and a **clear answer**.

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

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Answer Section A and EITHER Section B OR Section C.

SECTION A: TECTONIC PROCESSES AND HAZARDS

Answer Question 1. Write your answers in the spaces provided.

You must use the Resource Booklet provided.

1 (a) Identify which hazard is a primary impact of an earthquake.

(1)

☒	**A** Aftershocks
☒	**B** Crustal fracturing
☒	**C** Pyroclastic flow
☒	**D** Tsunamis

(b) Study Figure 1 in the Resource Booklet.

Papua New Guinea experienced a magnitude 7.5 earthquake in February 2018.

Figure 1 shows the frequency of the aftershocks that were reported.

(i) Calculate the mean number of aftershocks per day.

Show your working.

Give your answer to 1 decimal place.

(2)

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(ii) Suggest **one** reason for the changing number of aftershocks each day.

(3)

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(c) There are complex interrelationships between a hazard and the community it affects. These can be explained by the Pressure and Release Model.

Explain **two** parts of this model.

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(d) Explain why some tectonic hazards occur away from plate boundaries.

(6)

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(e) Assess the view that tectonic disasters are affecting more people in the world, but causing fewer deaths than in the past.

(12)

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(Total for Question 1 = 28 marks)

TOTAL FOR SECTION A = 28 MARKS

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SECTION B: GLACIATED LANDSCAPES AND CHANGE

Do not answer Section B (Glaciated Landscapes and Change) if you have answered Section C (Coastal Landscapes and Change).

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

If you answer Section B put a cross in the box ☐ .

You must use the Resource Booklet provided.

2 (a) Define the term 'cryosphere'.

(1)

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(b) Study Figure 2a below which shows data collected about the surface area of nine European glaciers in 1977 and 1995.

A t-test can establish if there is a significant difference between the two datasets.

	Surface area of 9 glaciers in 1977	**Surface area of 9 glaciers in 1995**
Mean glacier size	7.3	3.8
Standard deviation	1.5	1.7

Figure 2a

(i) Using the partially completed Student's t-test below, calculate the value of t.

Give your answer to 1 decimal place.

(1)

$$t = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}} = \frac{\mathbf{3.5}}{\mathbf{0.8}}$$

t = ...

(ii) Identify the significance level of your t-test result using Figure 2b in the Resource Booklet.

(1)

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(iii) Suggest **one** reason for the change in size of glaciers between 1977 and 1995.

(3)

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(c) Explain **two** economic reasons why glaciated landscapes are important.

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(d) Using a named example, explain how periglacial landforms produce a distinctive landscape.

(6)

Named example: .....

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(e) Assess the importance of ablation in contributing to the rate of glacier movement.

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(Total for Question 2 = 28 marks)

3 (a) Study Figure 3 in the Resource Booklet.

A group of students used GIS to find secondary information to help plan their primary fieldwork investigation into glaciated landscapes in the Cairngorms National Park.

(i) Identify the type of landscape shown in Figure 3.

(1)

☒	**A** Lowland active
☒	**B** Lowland relict
☒	**C** Upland active
☒	**D** Upland relict

(ii) Study Figure 3.

Identify the type of glaciated landform shown in box A (Loch Brandy).

(1)

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(iii) Describe the angle of slope the students might expect to find around Loch Brandy.

(3)

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(iv) Explain **two** decisions these students would have to make as part of a risk assessment.

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(b) You have carried out **primary fieldwork** to investigate glacial landscapes and change.

Assess the effectiveness of the techniques you used to present and analyse your fieldwork data.

(9)

Geographical enquiry question:

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(Total for Question 3 = 18 marks)

Use your knowledge and understanding from across the course of study, along with the information in Figure 4, to answer this question.

4 Study Figures 4a, 4b, 4c and 4d in the Resource Booklet.

Evaluate the view that the risks from tectonic activity in Villarrica National Park outweigh those from glacial processes.

(16)

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(Total for Question 4 = 16 marks)

TOTAL FOR SECTION B = 62 MARKS

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SECTION C: COASTAL LANDSCAPES AND CHANGE

Do not answer Section C (Coastal Landscapes and Change) if you have answered Section B (Glaciated Landscapes and Change).

If you answer Section C put a cross in the box ☒ .

You must use the Resource Booklet provided.

5 (a) Define the term 'eustatic sea level change'.

(1)

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(b) Study Figure 5a below which shows two samples of nine pebbles on a beach on the east coast of England.

A t-test can determine if there is a significant difference between the two sets of data.

	Average size of 9 pebbles at the backshore	**Average size of 9 pebbles at the foreshore**
Mean pebble size	38	25
Standard deviation	8.1	6.2

Figure 5a

(i) Using the partially completed Student's t-test below, calculate the value of t.

Give your answer to 1 decimal place.

(1)

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}} = \frac{\mathbf{13}}{\mathbf{3.4}}$$

t = ...

(ii) Identify the significance level of your t-test result using Figure 5b in the Resource Booklet.

(1)

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(iii) Suggest **one** reason for the difference in pebble size.

(3)

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(c) Explain **two** economic reasons why coastal recession is significant.

(4)

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(d) Using a named example, explain the sediment cell concept.

(6)

Named example: .....

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(e) Assess the importance of subaerial processes in contributing to the rate of coastal recession.

(12)

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(Total for Question 5 = 28 marks)

6 (a) Study Figure 6 in the Resource Booklet.

A group of students used GIS to find secondary information about the relief of the Glamorgan Heritage Coast in South Wales in order to help plan their fieldwork investigation into coastal landscapes.

(i) Identify the most likely type of coastal landscape shown in Figure 6.

(1)

☒	**A** Rocky and concordant
☒	**B** Rocky and discordant
☒	**C** Sandy and concordant
☒	**D** Sandy and discordant

(ii) Study Figure 6.

Identify **one** coastal landform shown in box A.

(1)

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(iii) Describe the angle of slope the students might expect to find at this stretch of coastline.

(3)

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(iv) Explain **two** decisions these students would have to make as part of a risk assessment.

(4)

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(b) You have carried out **primary fieldwork** to investigate coastal landscapes and change.

Assess the effectiveness of the techniques you used to present and analyse your fieldwork data.

(9)

Geographical enquiry question:

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(Total for Question 6 = 18 marks)

Use your knowledge and understanding from across the course of study, along with the information in Figure 7, to answer this question.

7 Study Figures 7a, 7b, 7c and 7d in the Resource Booklet.

Evaluate the view that the risks from tectonic activity in Bali outweigh those from coastal processes.

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(Total for Question 7 = 16 marks)

TOTAL FOR SECTION C = 62 MARKS
TOTAL FOR PAPER = 90 MARKS

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Tuesday 12 May 2020

Afternoon (Time: 1 hour 45 minutes) | Paper Reference **8GE0/01**

Geography

Advanced Subsidiary

Paper 1: Dynamic Landscapes

Resource Booklet

Do not return this Resource Booklet with the question paper.

Turn over

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SECTION A

The following resource relates to Question 1.

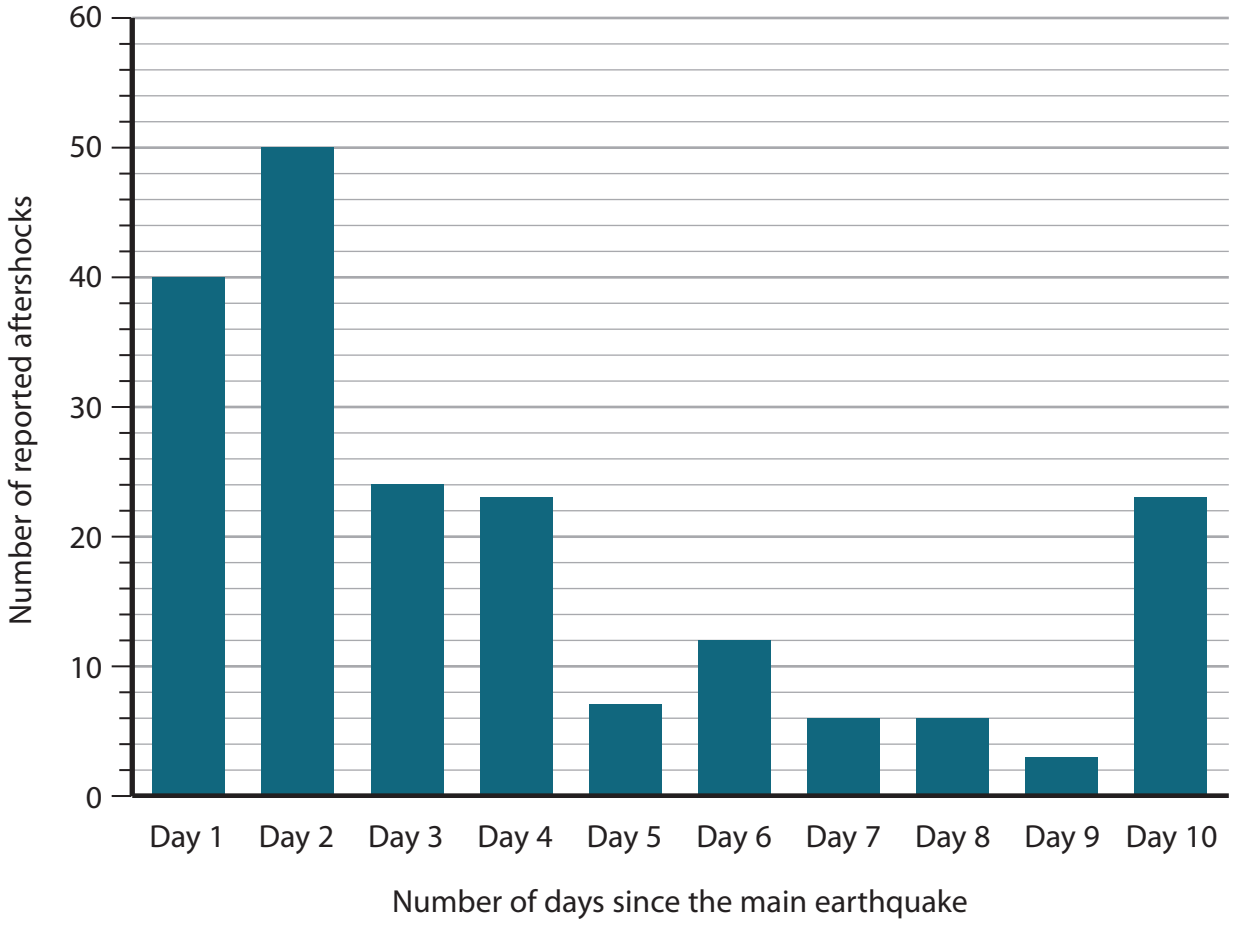


Figure 1

Aftershocks reported after the February 2018 earthquake in Papua New Guinea

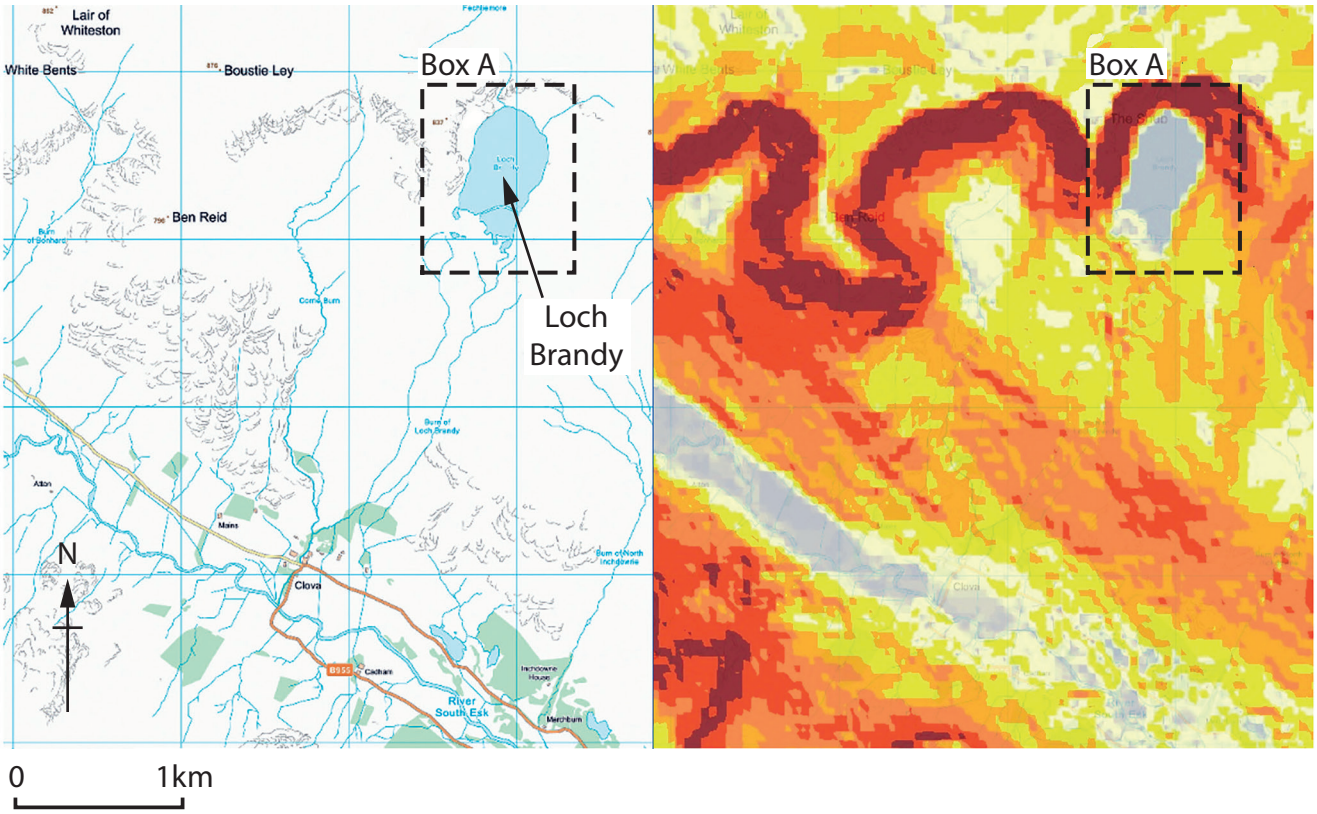
SECTION B

The following resources relate to Questions 2–4.

Degrees of freedom	0.20	0.10	0.05	0.02	0.01	0.001
18	1.330	1.734	2.101	2.552	2.878	3.922

Figure 2b

Significance table for t-test



Key	Slope angle
Roads	Extremely high / steep 31–90°
Rivers / Streams / Lakes	21–30°
Craggy rock areas	16–20°
Study area	11–15°
	6–10°
	Extremely low / gentle 1–5°
	Flat or water level 0°

Figure 3

Geographic Information System (GIS) maps showing slope angle around Glen Clova valley, Cairngorms National Park, Scotland

The following resources relate to Question 4.

- Volcan Villarrica is a composite volcano near a destructive plate boundary between the Nazca and South American plates. It is one of the most active volcanoes in the world.
- The volcano is covered by 40 km^2 of glaciers, however these are shrinking. 25% of the surface area was lost between 1961 and 2003.
- The volcano erupted in 1971. Poisonous gases and lahars flowed down river valleys towards the nearby towns of Molco and El Turbio. 12 people were killed. Another eruption began in 2015.
- Chile's Gross Domestic Product (GDP) per capita in 2017 was US$24,643. The volcano is situated in Villarrica National Park, popular with winter skiers, summer hikers and for the geothermal springs in nearby towns. The park authorities are responsible for the management of hazard risks.

Figure 4a

Information about Volcan Villarrica in the Andes, Chile, South America

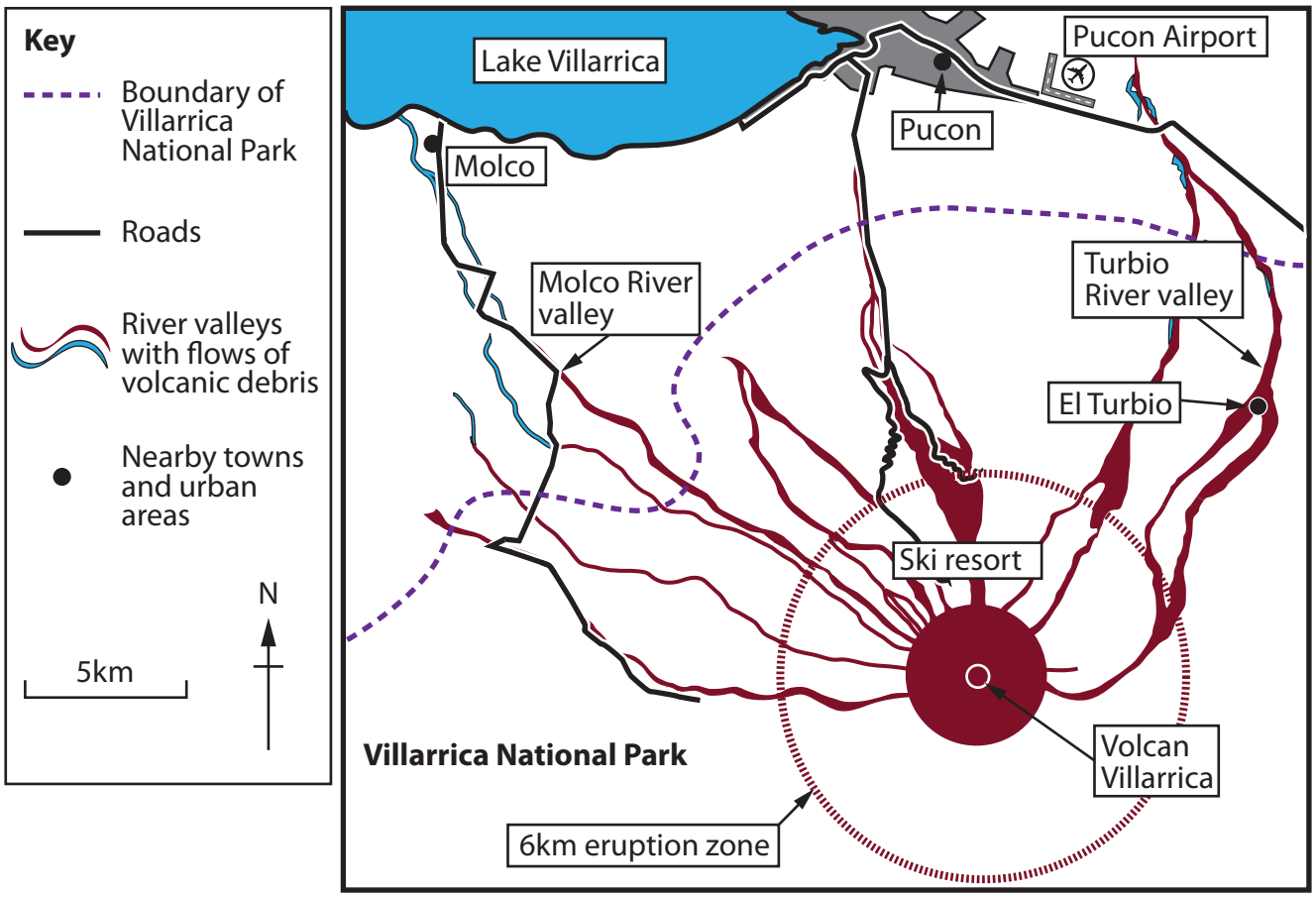


Figure 4b

Villarrica National Park showing nearby towns and major threats

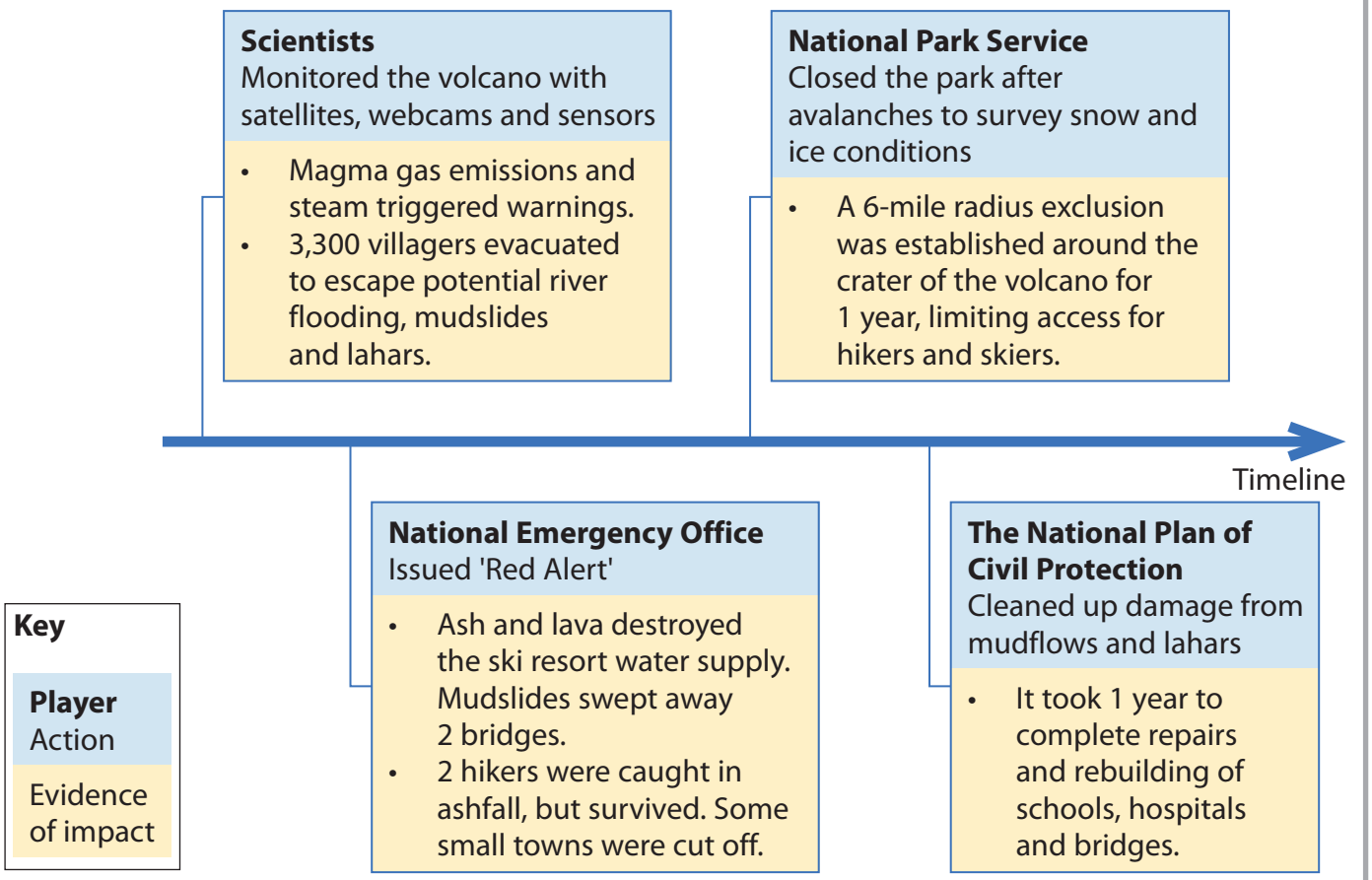


Figure 4c

Hazard responses during the 2015 eruption of Volcan Villarrica

Ski resort infrastructure on the sides of Mt Villarrica.

100 m wide snow avalanches in 2010 seriously injured 1 tourist.

15 people were killed by asphyxiation in 1971. Mudflows here killed 100 people over the 20th century.

Evacuation of tourists from Pucon during an eruption of Mt Villarrica in 2017.

Ash layers on top of glaciers on Mt Villarrica.

Ash absorbs sunlight, increasing ablation.

Figure 4d

Three scenes from Mt Villarrica

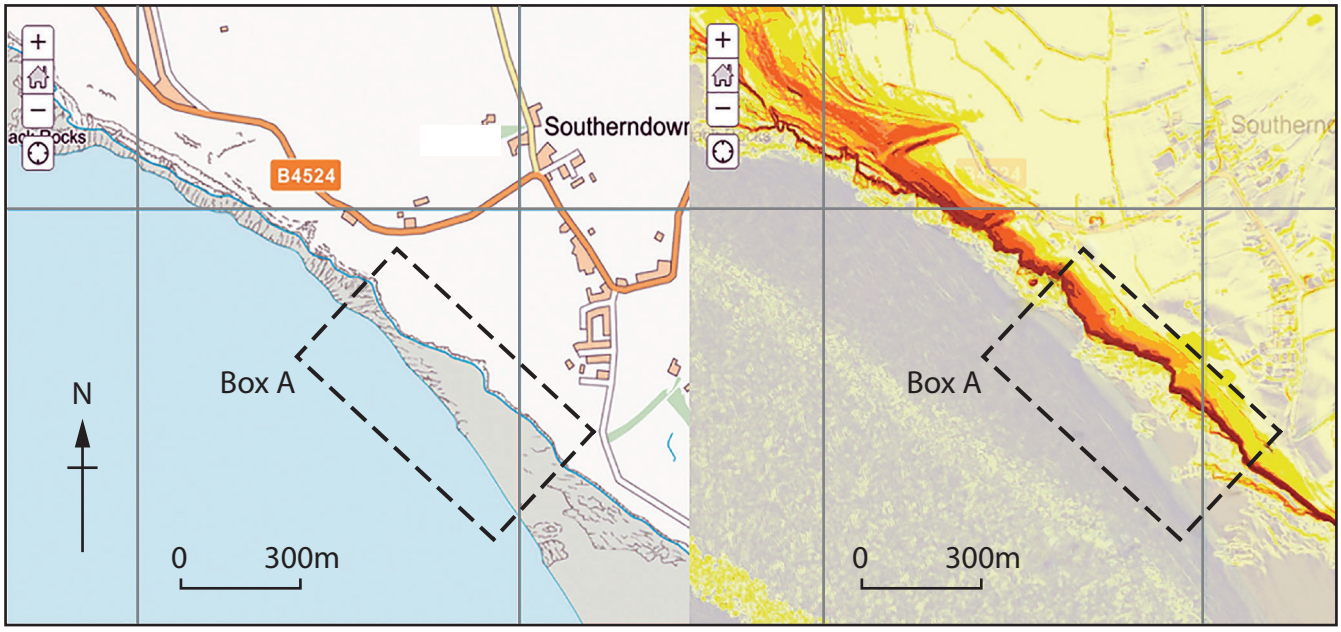
SECTION C

The following resources relate to Questions 5–7.

Degrees of freedom	0.20	0.10	0.05	0.02	0.01	0.001
18	1.330	1.734	2.101	2.552	2.878	3.922

Figure 5b

Significance table for t-test



Key		Slope angle	
	Roads		Extremely high / steep 31–90°
	Rivers / Streams / Lakes		21–30°
	Craggy rock areas		16–20°
	Study area		11–15°
			6–10°
			Extremely low / gentle 1–5°
			Flat or water level 0°

Figure 6

Geographic Information System (GIS) maps showing slope angle around Southerndown, Glamorgan Heritage Coast, Wales

The following resources relate to Question 7.

- Bali is known for its beautiful beaches, surrounded by coral reefs. Most coastal resorts are near the capital city, Denpasar. There are many coastal and hill villages scattered all over the island, all with temples.
- Bali is on a destructive plate boundary, with two major composite volcanoes, Mt Batur and Mt Agung. In 1963, Mt Agung erupted (VEI5), triggering pyroclastic flows and lahars, killing 15,000 people in surrounding villages. Mt Agung erupted periodically during 2017–2019 and both volcanoes are predicted to erupt within the next 100 years.
- Tropical storms, earthquakes, landslides and tsunamis are other threats facing the island, as well as long-term erosion of sediment from beaches.
- Indonesia is an emerging economy, with a Gross Domestic Product (GDP) per capita of US$3,846 in 2017. There is no integrated coastal zone management strategy in Bali and hazard management is focused on tourist areas. Many rural villages have no disaster risk mapping or community awareness drills.

Figure 7a

Information about Bali, a volcanic island in Indonesia

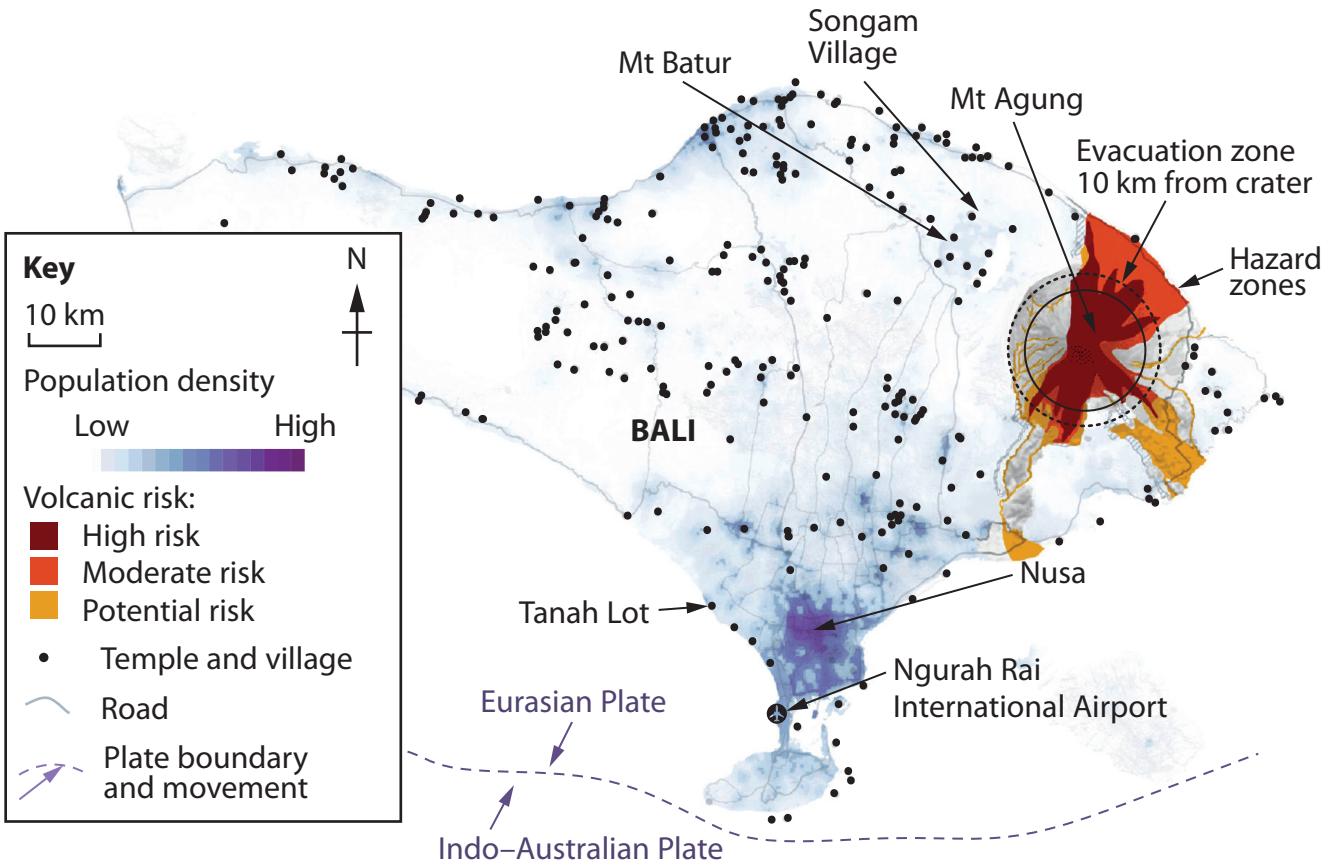


Figure 7b

Major threats and concentration of population in Bali

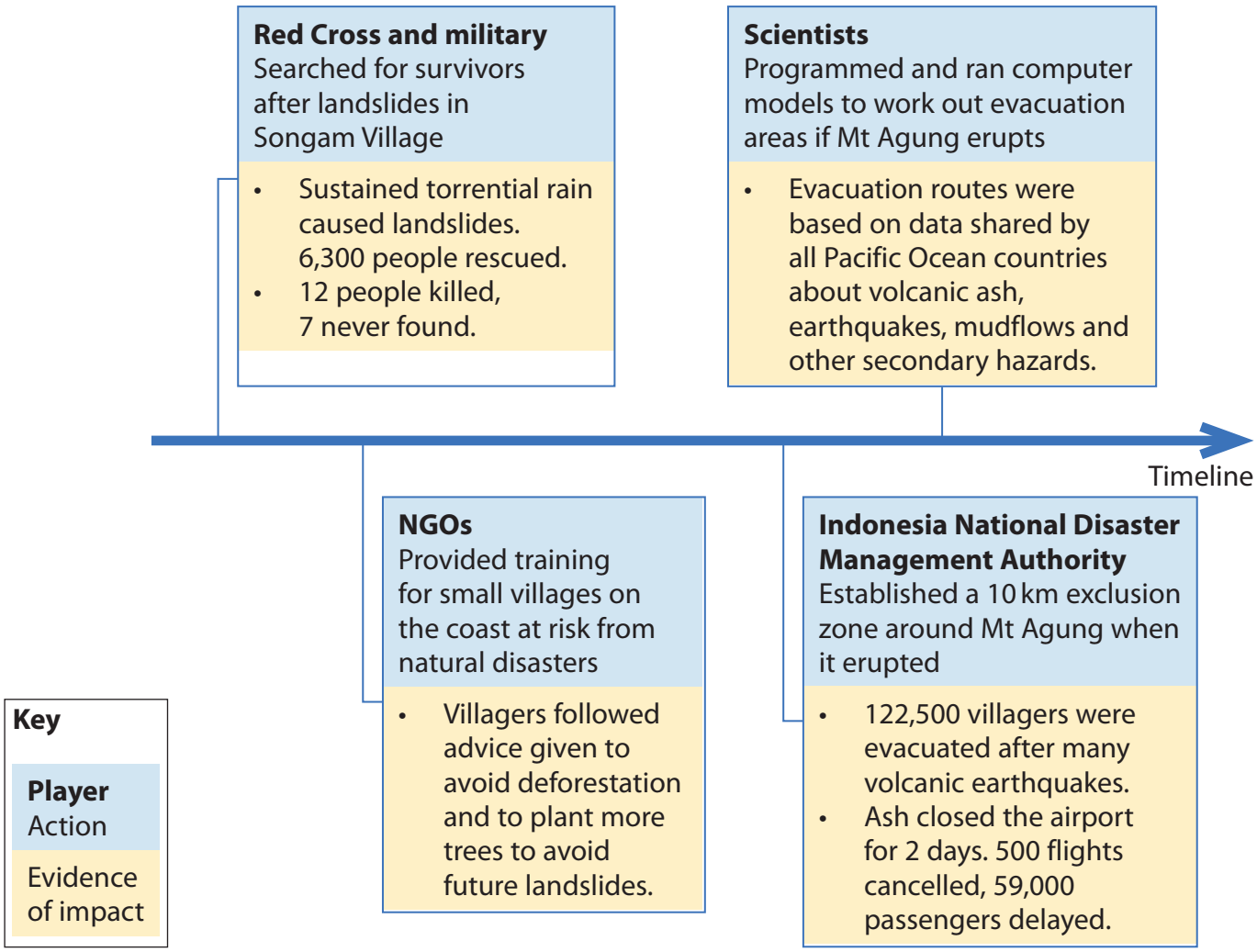


Figure 7c

Hazard responses during landslides and volcanic eruptions in 2017

Damage to beaches at Tanah Lot temple in Bali.

The coastline is eroding at 2 m/year, exacerbated by rising seawater levels.

Coral and river sediment are illegally removed for hotel construction.

Storm and tidal surges threaten coastal resorts up to 100 m inland and can sweep people out to sea – 10 tourists killed in 2013, 2 in 2016.

A tsunami warning sign in Nusa, a village in Bali.

Infrastructure is not being maintained.

Figure 7d

Images showing a lack of planned coastal management

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Pearson Education Ltd. gratefully acknowledges all following sources used in preparation of this paper:

Figure 1 (Source: https://www.usgs.gov/news/magnitude-75-earthquake-papua-new-guinea)

Figure 3 (Source: https://www.arcgis.com/lochbrandy)

Figure 4b (Source: ArcGIS.com)

Figure 4d (Source: Picture 1 © Andrew Bargery/Alamy Stock Photo, Picture 2 © Xinhua/Alamy Stock Photo)

Figure 6 (Source: ArcGIS.com)

Figure 7b (Source: https://graphics.straitstimes.com/STI/STIMEDIA/Interactives/2017/11/mount-agung-interactive-reuters/index.html)

Figure 7d (Source: Picture 1 © Robert Harding/Alamy Stock Photo, Picture 2 © Neil McAllister/Alamy Stock Photo, Picture 3 © Philip Game/Alamy Stock Photo)

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