Write your name here

Surname	Other names

Pearson Edexcel Level 3 GCE

Centre Number	Candidate Number

Geography

Advanced Subsidiary
Paper 1: Dynamic Landscapes

Tuesday 16 May 2017 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
8GE0/01

You must have:
Ruler, calculator, Resource Booklet (enclosed)

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 **all** questions 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.

Turn over ▶

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P 4 8 9 2 3 A 0 1 2 4

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Answer Section A and EITHER Section B OR Section C.

SECTION A: TECTONIC PROCESSES AND HAZARDS

Answer ALL questions. Write your answers in the spaces provided.

You must use the Resource Booklet provided.

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 ☒.

1 (a) Plate movement can be explained by several processes.

Identify **one** process that occurs **only** at destructive plate boundaries.

(1)

☒	**A** Mantle convection
☒	**B** Sea floor spreading
☒	**C** Subduction
☒	**D** Faulting

(b) Study Figure 1 in the Resource Booklet.

(i) Compare the data on the two earthquakes.

(2)

(ii) Suggest **one** way hazard management strategies may have affected the earthquake impacts in Japan.

(3)

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(c) Explain **two** secondary hazards caused by earthquakes.

(4)

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(d) Explain the tectonic hazards that may result from volcanic activity.

(6)

(e) Assess whether development and governance are the most important factors in understanding the scale of tectonic disasters.

(12)

(Total for Question 1 = 28 marks)

TOTAL FOR SECTION A = 28 MARKS

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).

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

You must use the Resource Booklet provided.

2 (a) State **one** factor that affects the rate of glacier movement.

(1)

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(b) (i) Study Figure 2 in the Resource Booklet, which shows velocity data for two different parts of a glacier.

Calculate the average rate of movement nearer the surface and nearer the base of the glacier.

Give your answer to the nearest whole number.

(2)

Nearer surface ..... metres/year

Nearer base ..... metres/year

(ii) Suggest **one** reason why velocity changes with depth.

(3)

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(c) Explain **two** processes of glacial erosion.

(4)

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(d) Explain the factors that create a lowland depositional landscape.

(6)

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(e) A range of threats affect glaciated landscapes.

Assess whether sustainable management schemes are always the most appropriate approach to dealing with these threats.

(12)

(Total for Question 2 = 28 marks)

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

The student collected data about the different clast (sediment) size in the Upper layer and Middle layer of glacial till deposits at Aberogwen, North Wales, as part of an investigation about glacial deposition.

(i) Complete Figure 3a below by adding the following data for the Upper layer.

(1)

Clast Size (cm)	Number recorded
5.1–7.5 cm	11
15.1–17.5 cm	20

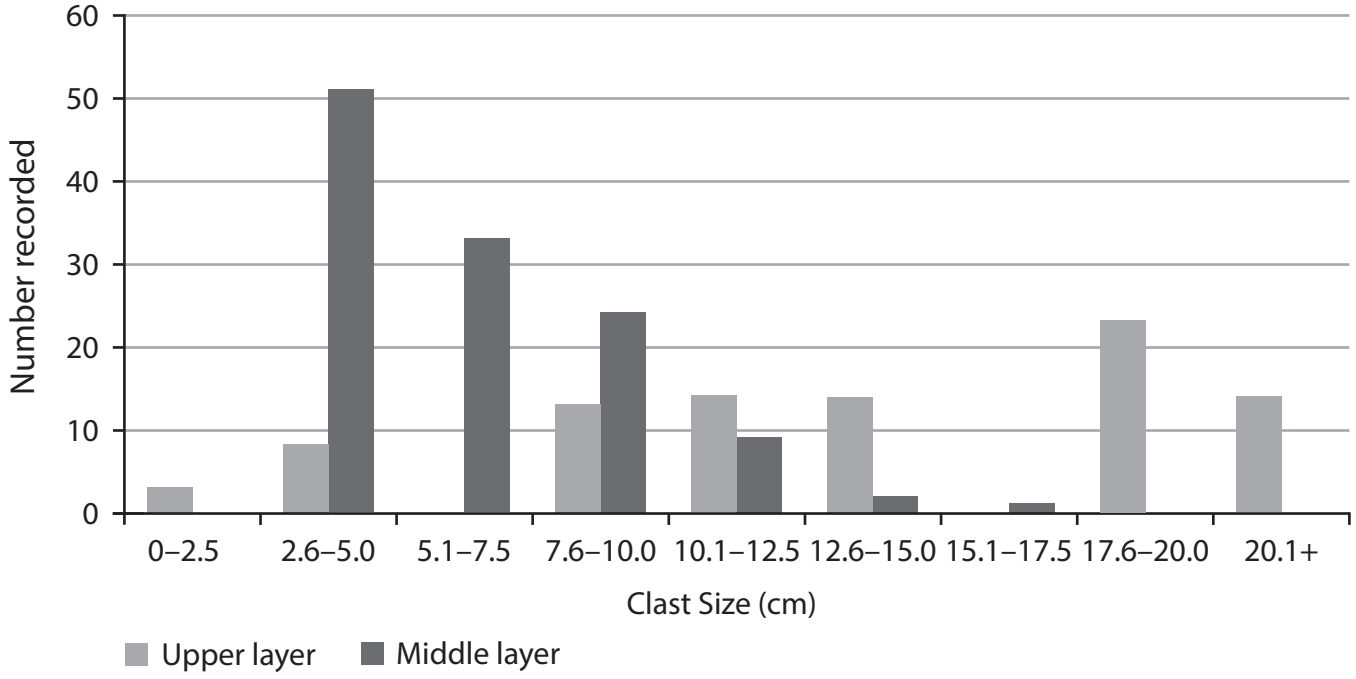

Figure 3a

(ii) The student decided to use a stratified sampling approach to collect their data.

State **two** reasons why this could be an appropriate approach.

(2)

(iii) Suggest **one** reason why the clast size in the Upper layer is different to that in the Middle layer.

(2)

(iv) The student collected this data to investigate the differences between glacial sediment.

Explain **two** other techniques the student could have used as part of their investigation.

(4)

1

2

(b) You have carried out **secondary research** to investigate glacial landscapes and change.

Assess the value of **secondary research** in undertaking your geographical investigation.

(9)

Geographical enquiry question:

(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 contribution of engineering solutions to managing Alaska's fragile environment.

(16)

(Total for Question 4 = 16 marks)

TOTAL FOR SECTION B = 62 MARKS

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) State **one** factor that affects coastal sediment transport.

(1)

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(b) (i) Study Figure 5 in the Resource Booklet, which shows sets of wave frequency data for two locations in Dorset.

Calculate the average wave frequency at each location.

Give your answer to the nearest whole number.

(2)

Location A ..... waves/minute

Location B ..... waves/minute

(ii) Suggest **one** reason why the wave frequency at the two locations differ.

(3)

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(c) Explain **two** coastal depositional processes.

(4)

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(d) Explain the factors that create an erosional coastline.

(6)

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(e) Assess whether sustainable management schemes are always the most appropriate for managing the risks to coastlines.

(12)

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(Total for Question 5 = 28 marks)

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

The student collected data about clast (sediment) size at two sites in Porlock Bay, Somerset, as part of an investigation about coastal deposition.

(i) Complete Figure 6a below by adding the following data for Site X.

(1)

Clast Size (cm)	Number recorded
5.1–7.5	13
15.1–17.5	11

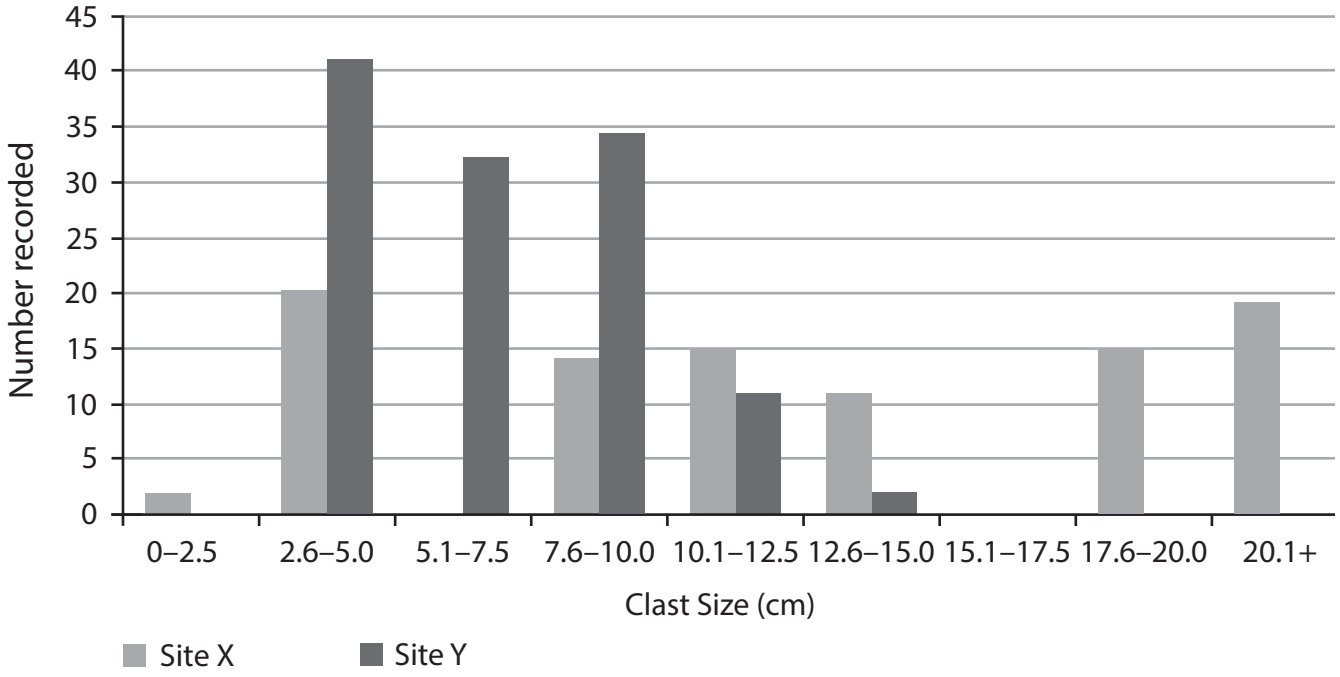

Figure 6a

(ii) At both sites, X and Y, the student decided to use a stratified sampling approach to collect their data.

State **two** reasons why this could be an appropriate approach.

(2)

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(iii) Suggest **one** reason why the clast size at Site X is different to that at Site Y.

(2)

(iv) The student collected this data to investigate changes to coastal sediment.

Explain **two** other techniques the student could have used as part of their investigation.

(4)

1

2

(b) You have carried out **secondary research** to investigate coastal landscapes and change.

Assess the value of **secondary research** in undertaking your geographical investigation.

(9)

Geographical enquiry question:

(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 contribution of hard engineering approaches to managing Venice's fragile environment.

(16)

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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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Do not return this Resource Booklet with the question paper.

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SECTION A

The following resource relates to Question 1.

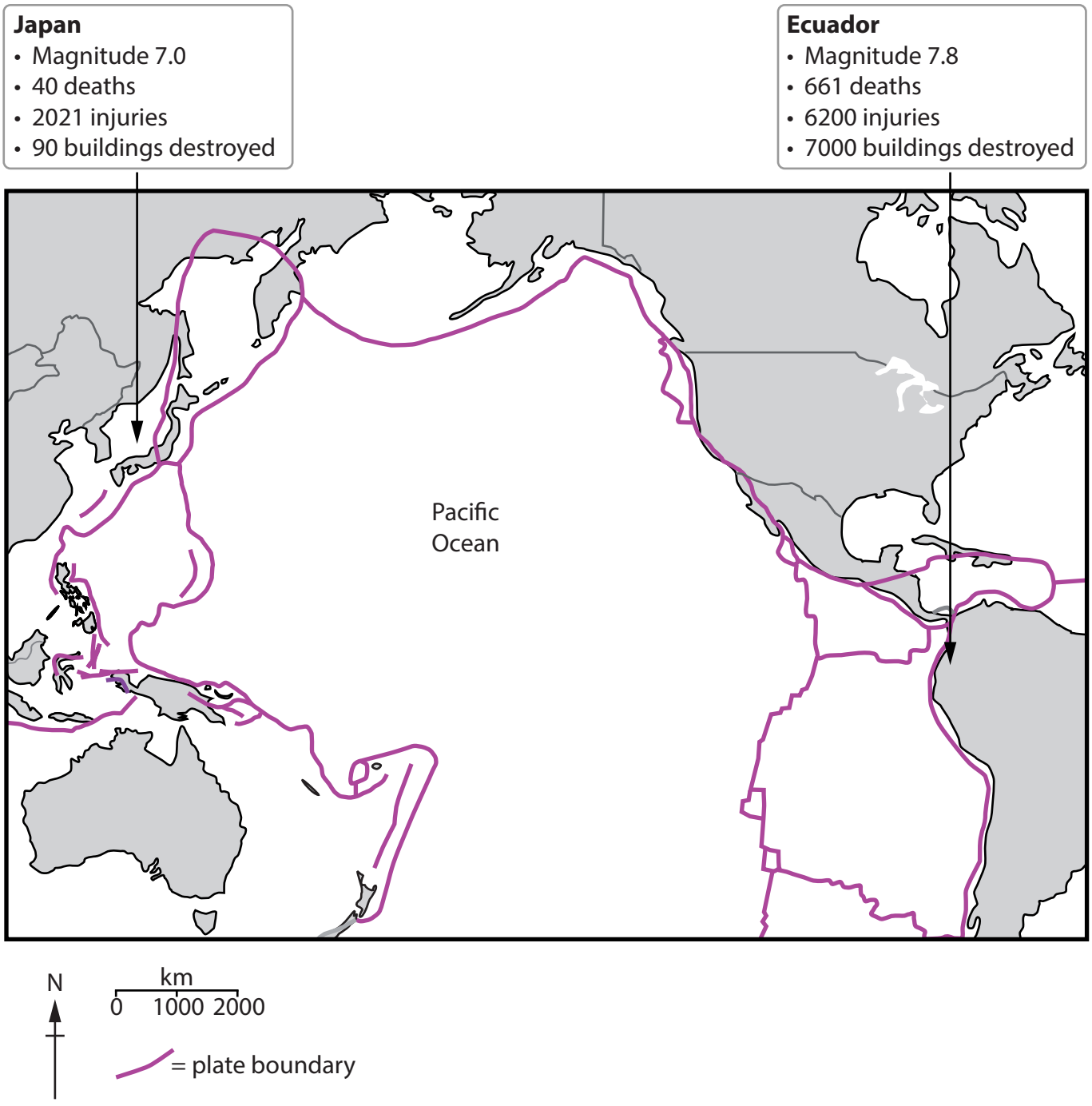


Figure 1

The impact of two earthquakes in April 2016

SECTION B

The following resources relate to Questions 2–4.

Nearer surface (metres/year)	**Nearer base** (metres/year)
29	24
30	21
29	17
28	15
27	12
26	7
26	3

Figure 2

Velocity data for the Athabasca Glacier, a cold-based glacier in Canada

Figure 3

Photo of glacial deposit at Aberogwen, North Wales

The following resources relate to Question 4.

- Oil was discovered in Alaska in 1968 and the Trans-Alaskan pipeline was built between 1974 and 1977 to transport oil to the port of Valdez in the south of Alaska.
- Alaska's North Slope has been drilled for oil since 1969, but President Obama banned exploration in the Arctic National Wildlife Refuge (ANWR) in February 2015.
- The ANWR is an area of wilderness established in 1960; key species include caribou, grizzly bear and a variety of migratory birds and fish.
- Alaska is tectonically active – earthquakes occurred in 1964 (magnitude 9.2), 1975 (magnitude 7.6), 2002 (magnitude 7.1) and 2014 (magnitude 7.1) along the North American / Pacific plate boundary.

Figure 4a

Information about oil extraction in Alaska, USA

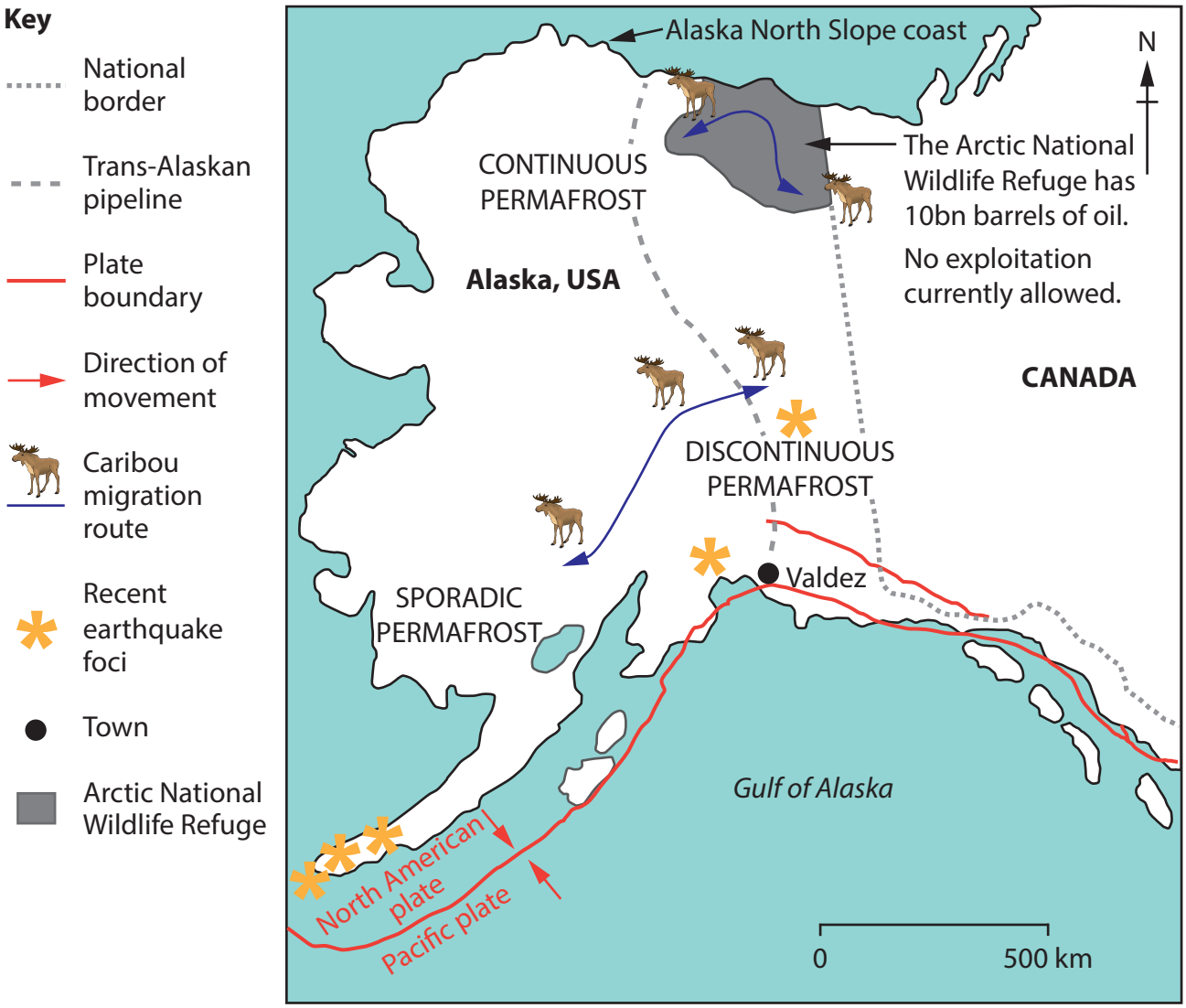


Figure 4b

Map of Alaska

The Gwich'in people are a native Alaskan group who live in the ANWR. They depend on the caribou for most of their food, clothing and survival. Exploitation threatens caribou migration routes.

Campaign group to protect the ANWR from being exploited

Oil is a good thing and our jobs are now industrial. We'd like companies to use the resources we've got but we don't want the natural environment to be ruined.

Resident on the North Slope coast, Alaska

We are facing a significant economic challenge as we find the money to respond to climate change. 80% of Alaska's revenue comes from exploiting oil.

Governor of Alaska

Figure 4c

Different opinions about the Trans-Alaskan pipeline

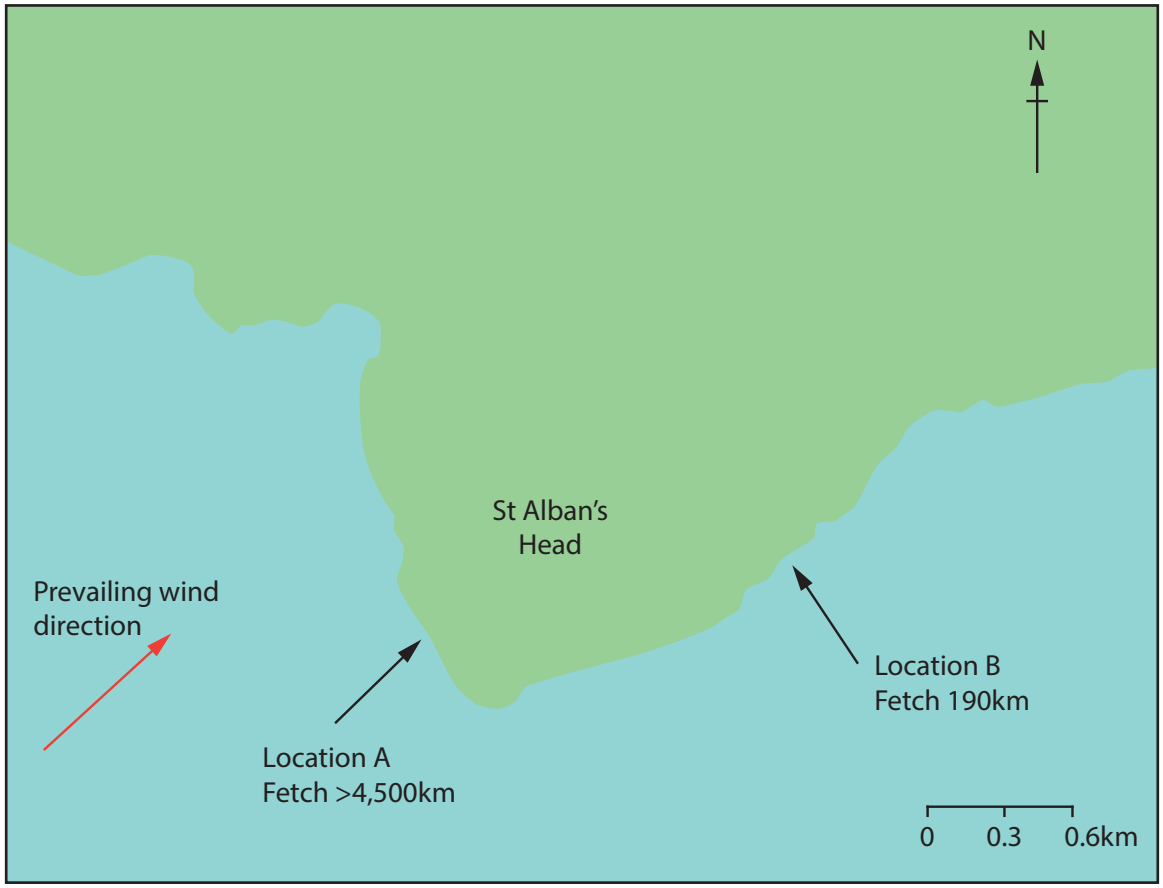
Figure 4d

The engineering design of the Trans-Alaskan pipeline

Turn over

SECTION C

The following resources relate to Questions 5–7.



Location A (Waves per minute)	**Location B** (Waves per minute)
16	7
18	8
19	7
17	9
15	6
14	8
15	9

Figure 5

Wave frequency data from two locations on the same day at St Alban's Head, Dorset (southern England)

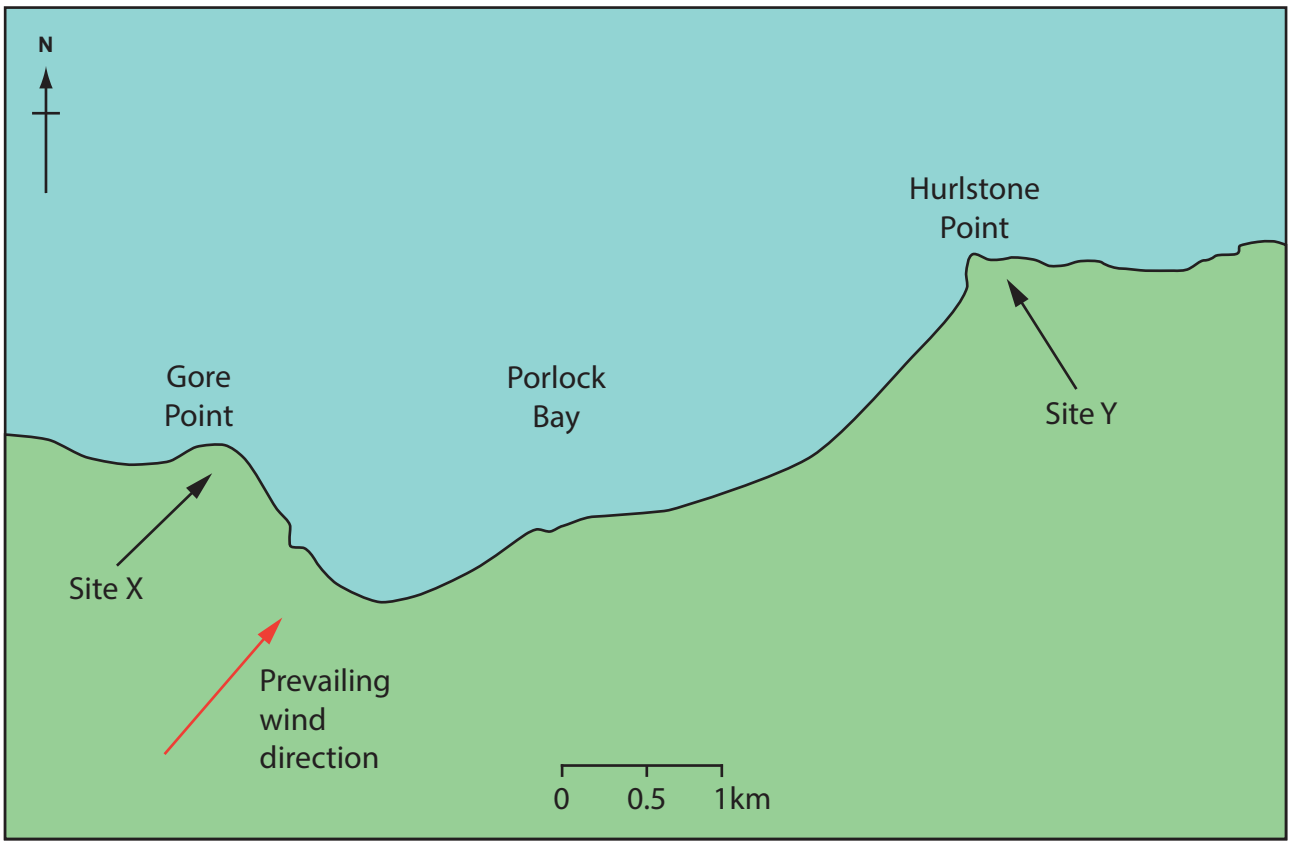


Figure 6

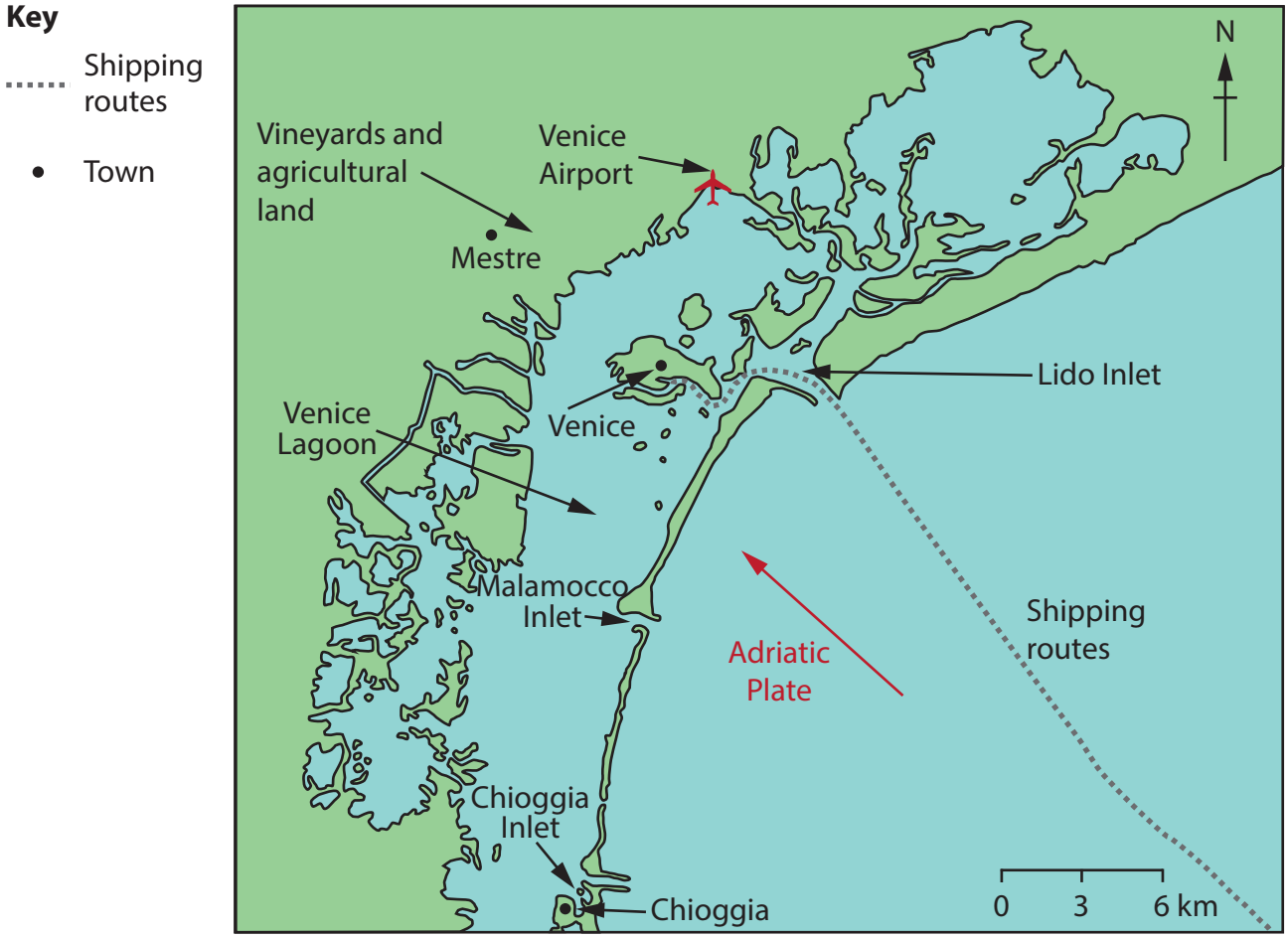
Map of Porlock Bay, Somerset (southern England)

The following resources relate to Question 7.

- Venice became a World Heritage Site in 1987. The city is a site for major works of art and architecture. It is located on islands surrounded by a salt marsh lagoon.
- Venice is on the Adriatic Plate which is subducting beneath the Eurasian Plate. As well as subsiding up to 2–3 mm/year, the city is tilting. Earthquakes, occurred in 2016 (magnitude 3.5), 2012 (magnitude 5.8) and 1976 (magnitude 6.3).
- 66,000 people visit Venice every day (many from cruise ships), generating an income for local residents of more than €150 million a year.
- The MOSE project will build 79 steel gates across the 3 inlets of Venice's lagoon. By pumping in air, the gates will rise up and block water surging in at high-tide.

Figure 7a

Information about coastal management in Venice, Italy



The MOSE project will be installed at the

- Lido Inlet
- Malamocco Inlet
- Chioggia Inlet

Figure 7b

Map of Venice and surrounding Lagoon

The MOSE project will disrupt the flow of water in and out of the lagoon. This would stop sewage and pollution from being flushed out to sea and threaten breeding grounds for birds. We could spend the money repairing buildings.

Anti-MOSE Campaign Group

I'm worried about loss of residents – 50% of Venice's population have left in the last 50 years because of flooding. Although the MOSE project blocks tidal surges, it does allow shipping to continue.

Professor of Geography
born in Venice

We built small walls in 2002 to stop flooding and we are able to start making wine again. The MOSE barrier is a good hard engineering solution that will protect both the city and Venice Airport.

Local vineyard owner
near Mestre

Figure 7c

Differing opinions about the MOSE project

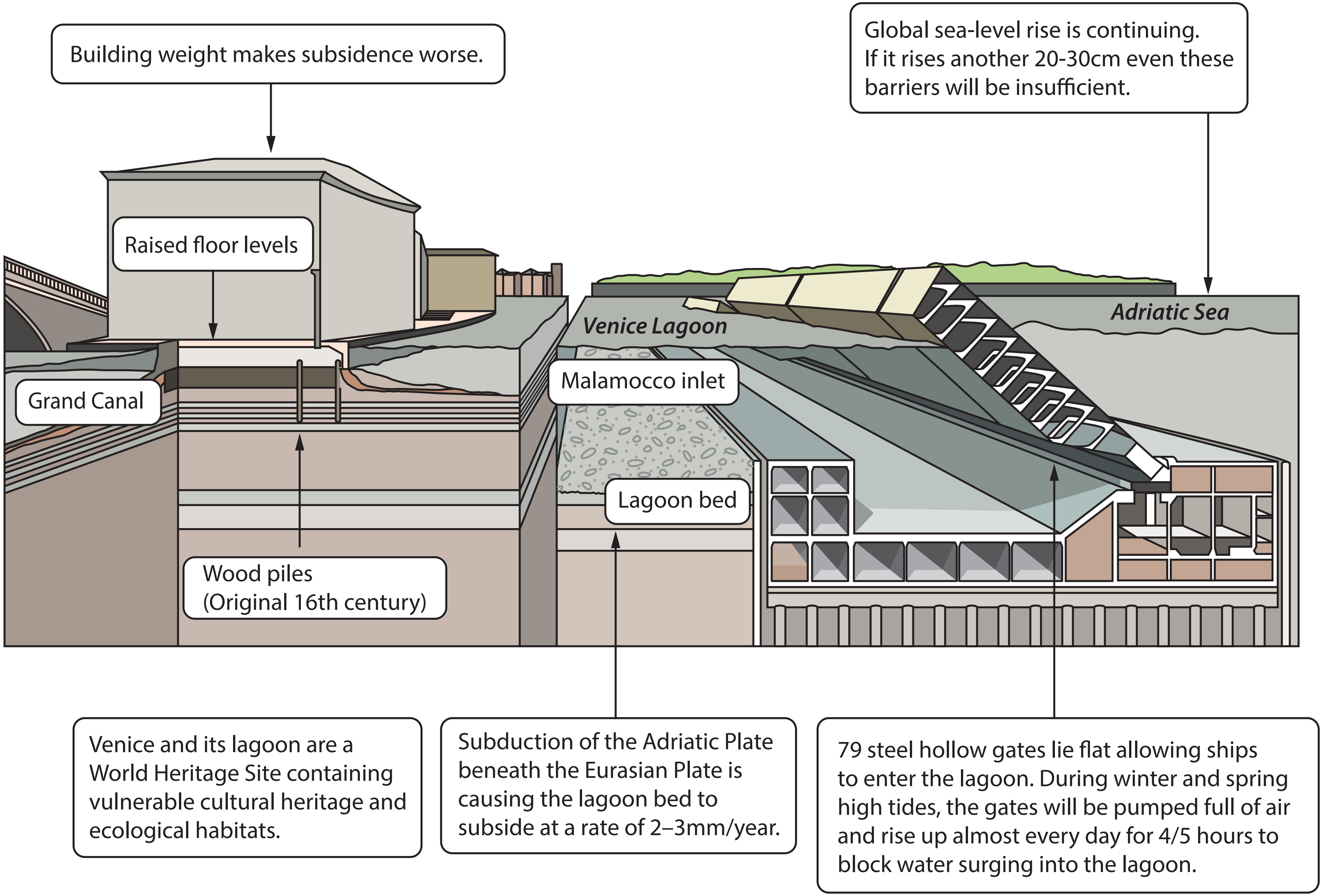


Figure 7d

The MOSE Sea Defence Project, Venice