

Pearson Edexcel Level 3 GCE

Geography

Advanced Subsidiary

Paper 1: Dynamic Landscapes

Tuesday 16 May 2017 – Afternoon

Resource Booklet

Paper Reference

8GE0/01

Do not return this Resource Booklet with the question paper.

Turn over ►

P48923A

©2017 Pearson Education Ltd.

1/1/1/1



P 4 8 9 2 3 A



Pearson

SECTION A

The following resource relates to Question 1.

Japan

- Magnitude 7.0
- 40 deaths
- 2021 injuries
- 90 buildings destroyed

Ecuador

- Magnitude 7.8
- 661 deaths
- 6200 injuries
- 7000 buildings destroyed

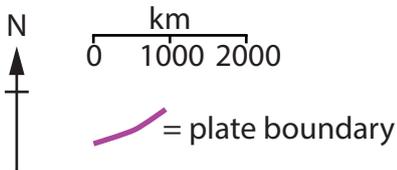
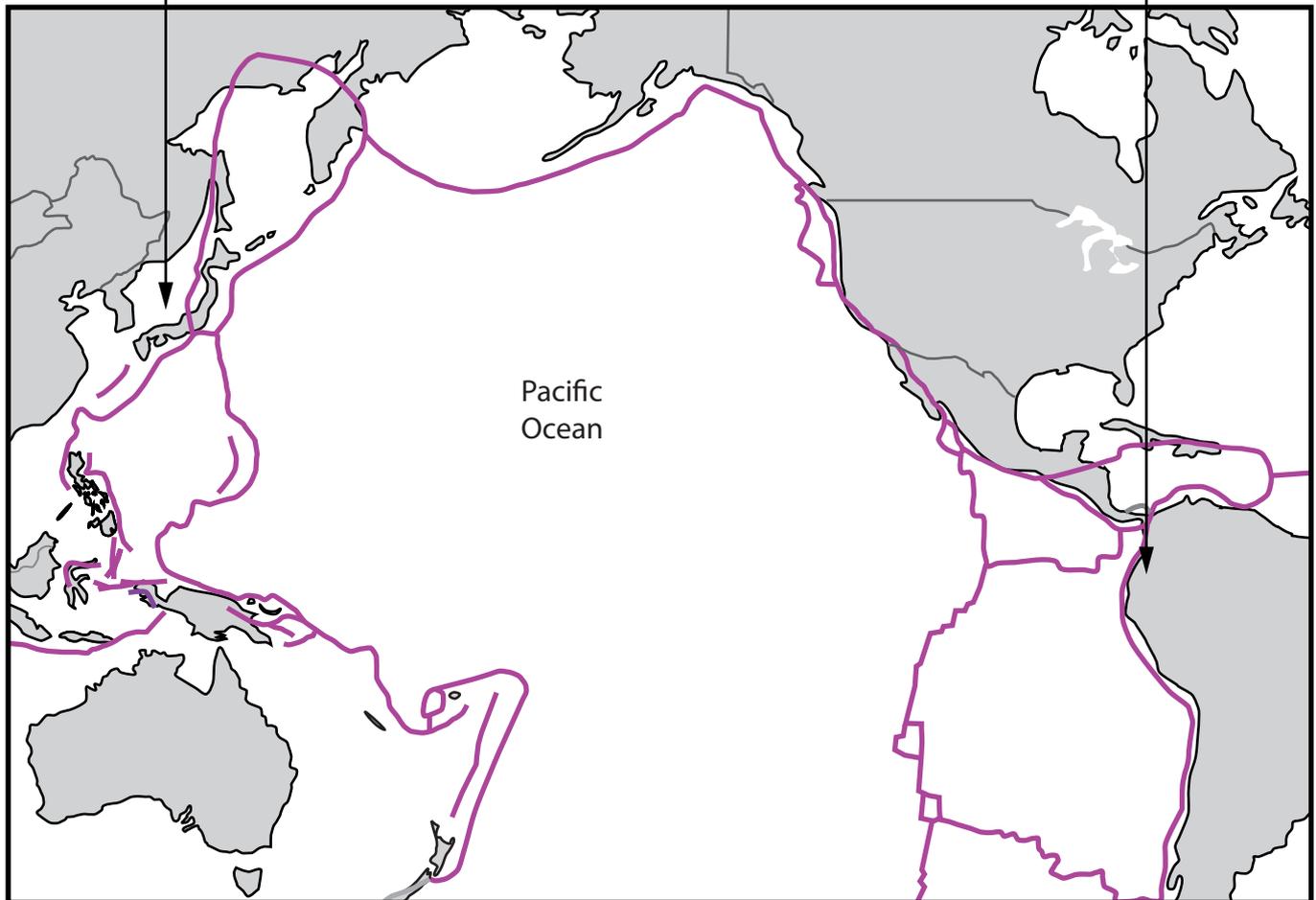


Figure 1

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

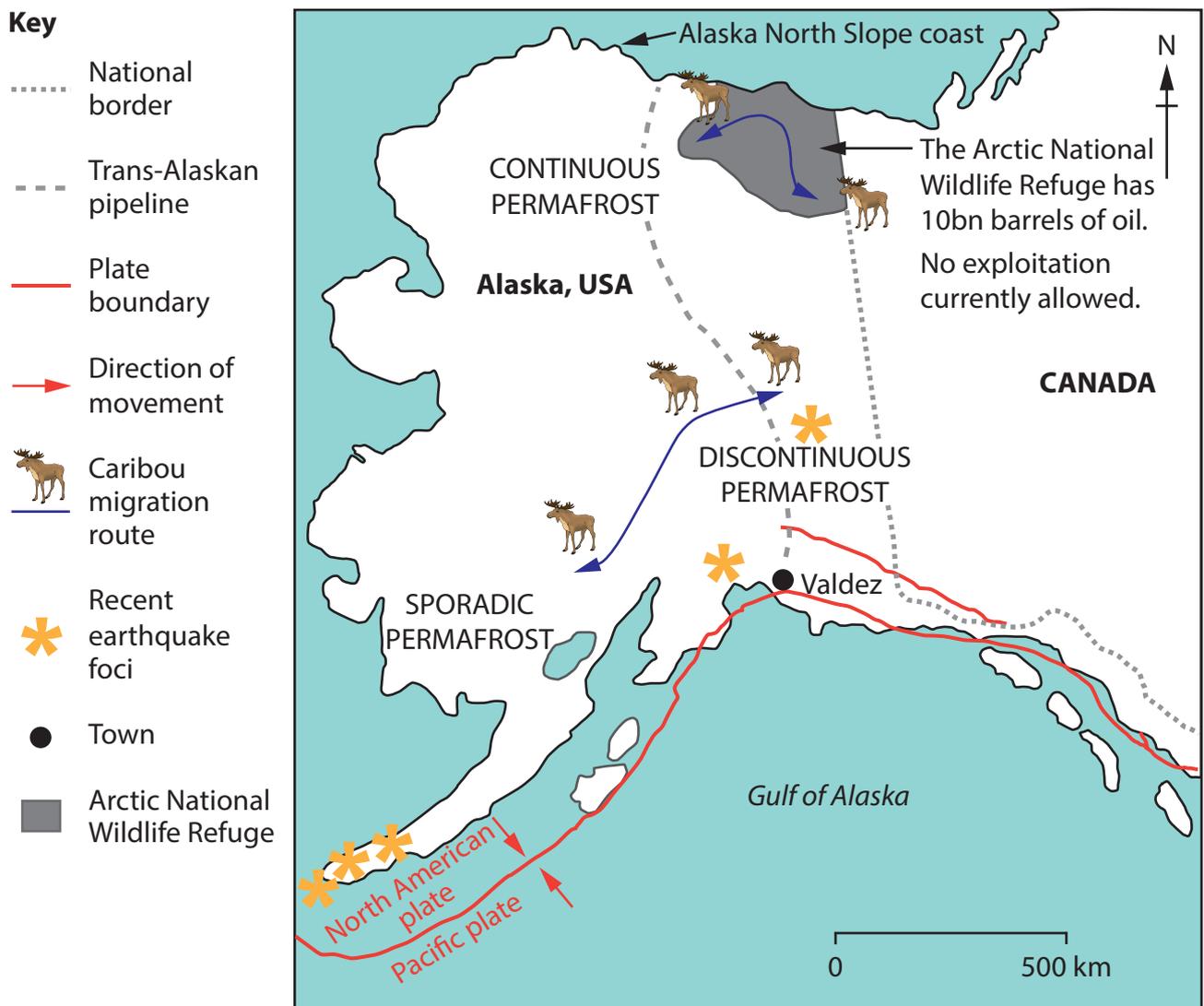


Figure 4b

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

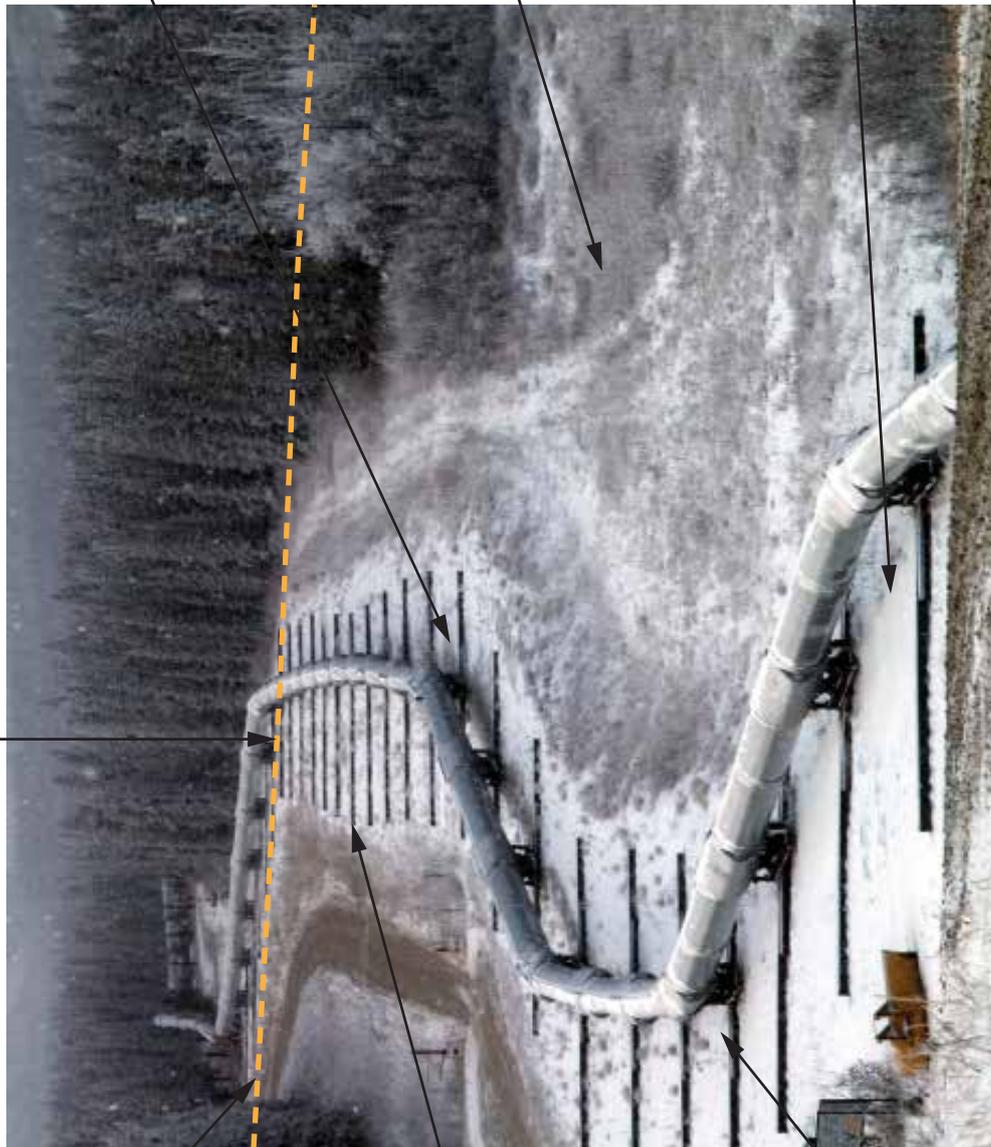
Different opinions about the Trans-Alaskan pipeline

Denali Faultline

An earthquake in 2002 ruptured the Denali Fault, causing the pipeline to slide on the sleepers

Sleepers allow up to 6m of horizontal movement and 1.5m vertical movement in an earthquake

Bends in the pipeline help counteract seasonal extreme temperature changes



Insulated supports prevent permafrost thaw and solifluction caused by heated oil

The tundra and taiga vegetation play an important role in maintaining natural water and carbon systems

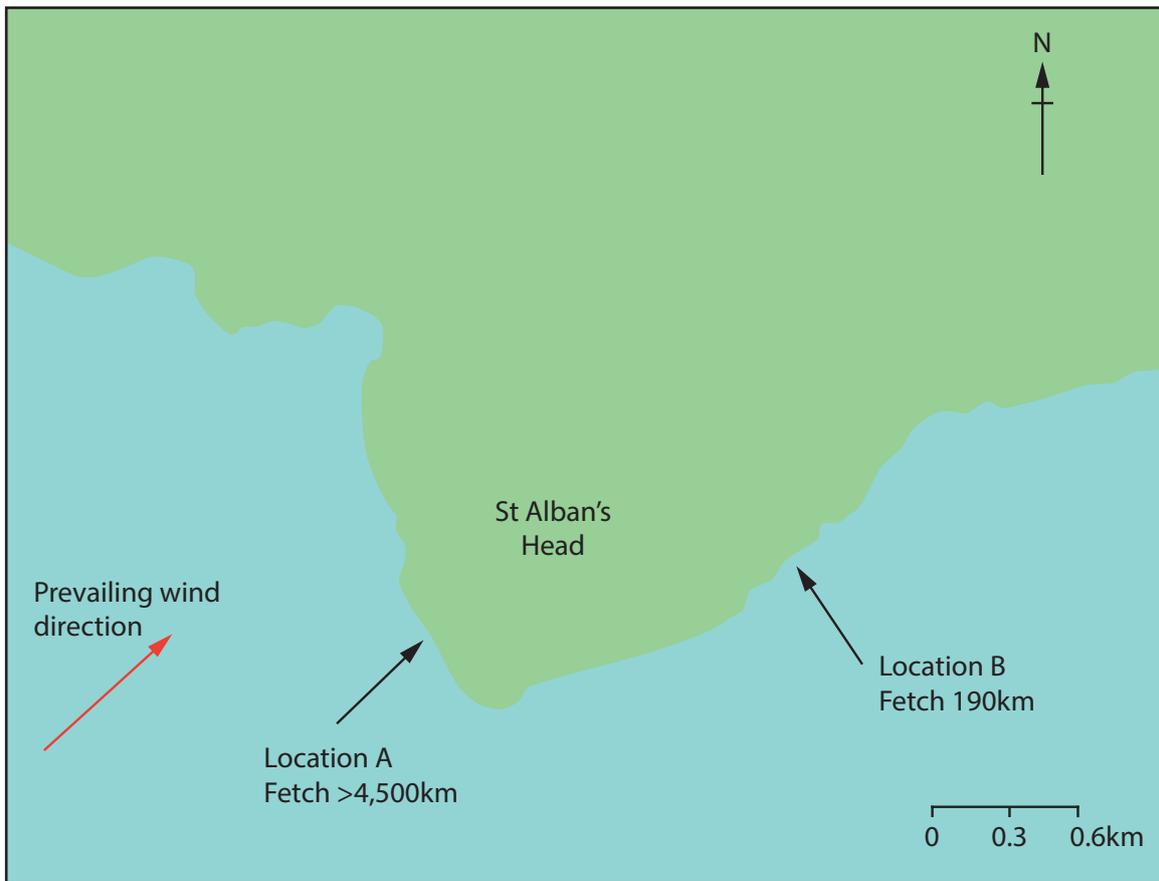
The pipeline sits up to 3m above ground to cross rivers and allow migration of caribou

Figure 4d

The engineering design of the Trans-Alaskan pipeline

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)

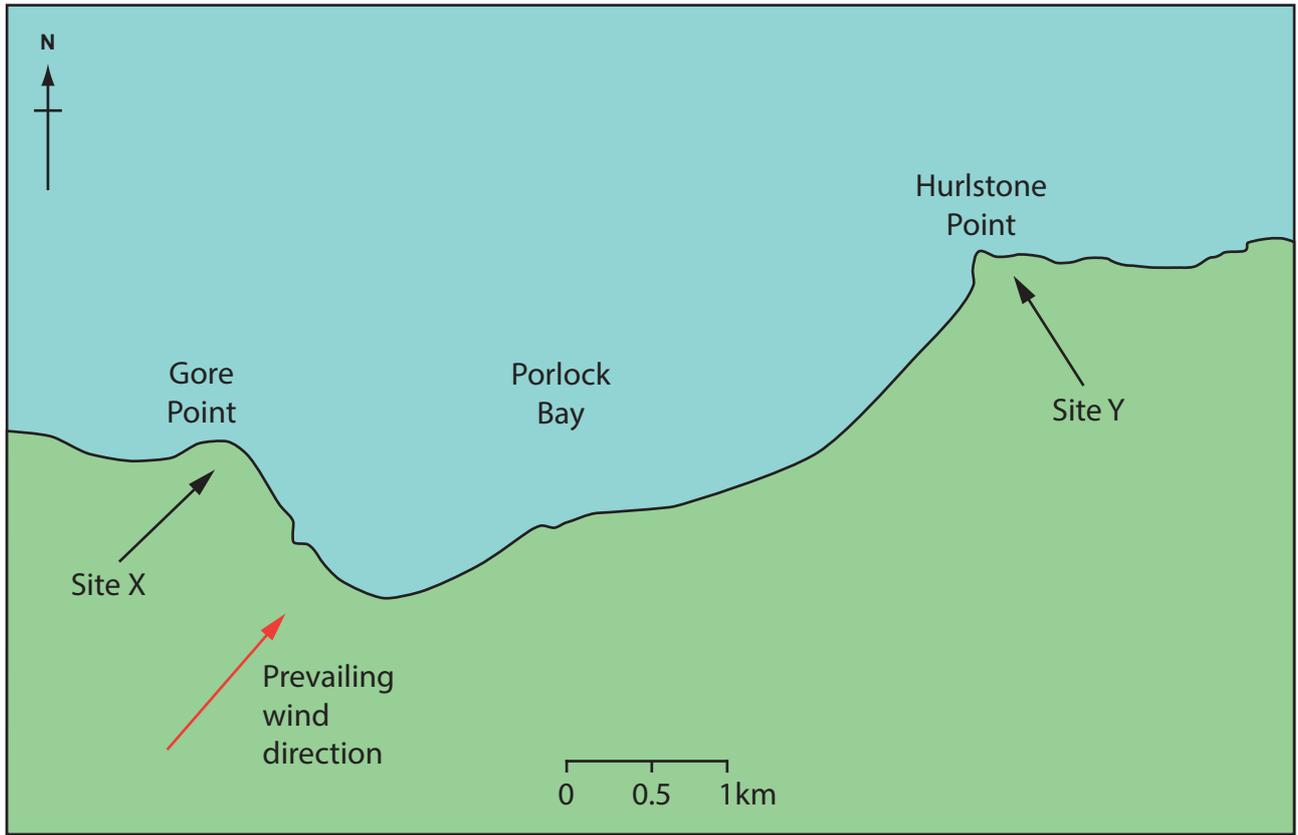


Figure 6

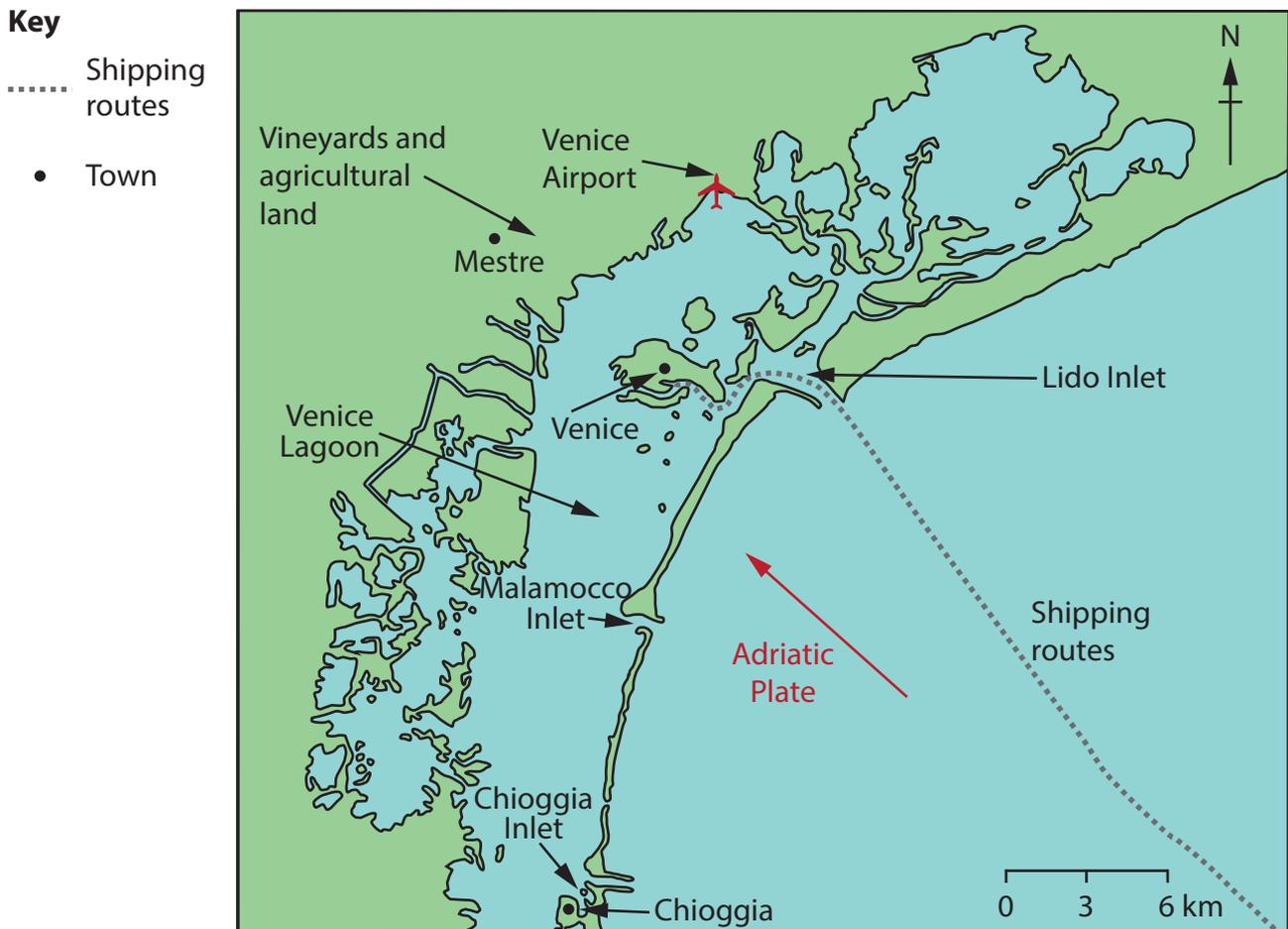
Map of Porlock Bay, Somerset (southern England)

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

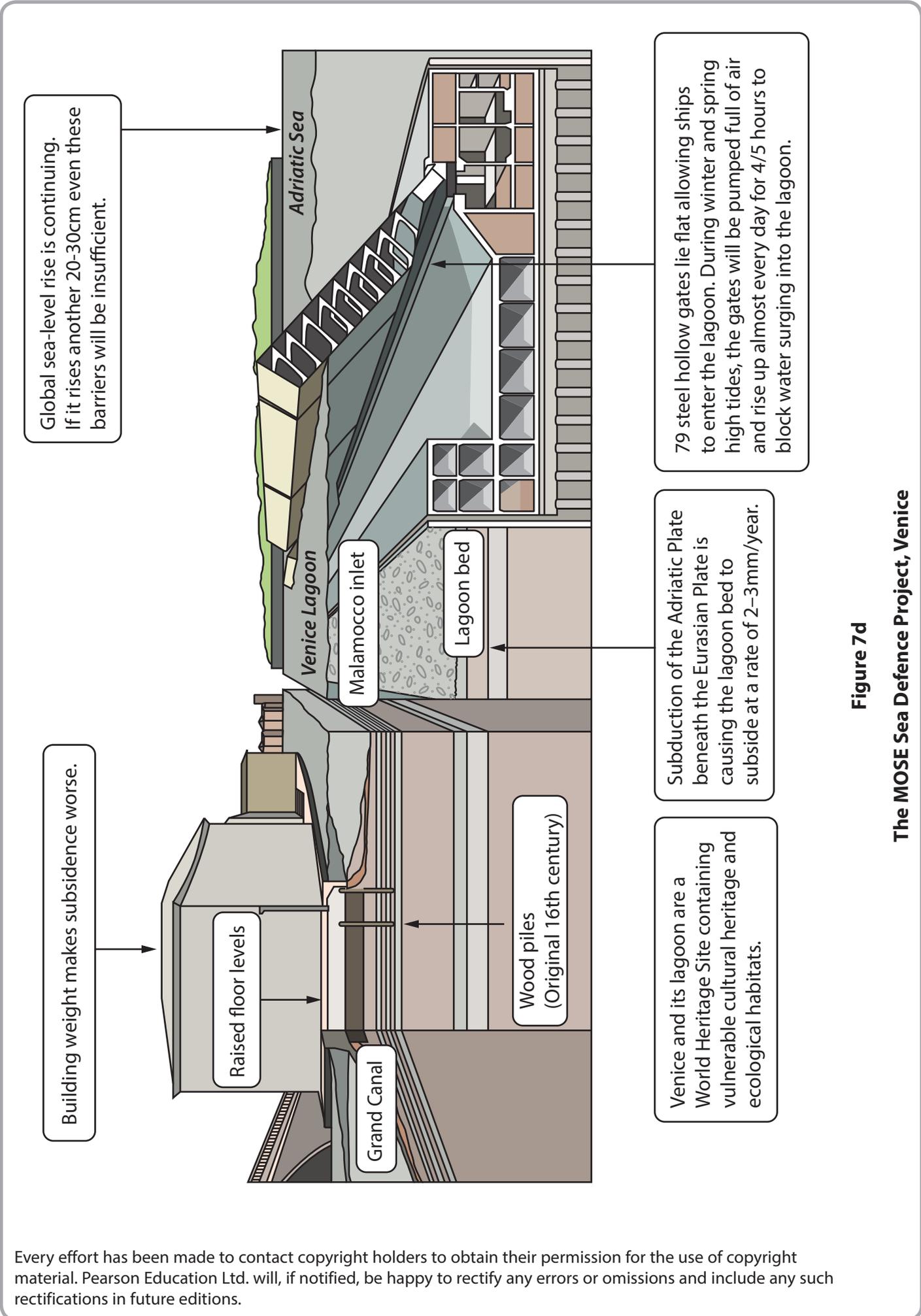
I'm worried about loss of residents – 50% of Venice's population have left in the last 50 years because of flooding. Although the MOSE project blocks tidal surges, it does allow shipping to continue.

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



Global sea-level rise is continuing. If it rises another 20-30cm even these barriers will be insufficient.

Building weight makes subsidence worse.

Raised floor levels

Grand Canal

Wood piles (Original 16th century)

Malamocco inlet

Lagoon bed

Venice Lagoon

Adriatic Sea

Venice and its lagoon are a World Heritage Site containing vulnerable cultural heritage and ecological habitats.

Subduction of the Adriatic Plate beneath the Eurasian Plate is causing the lagoon bed to subside at a rate of 2-3mm/year.

79 steel hollow gates lie flat allowing ships to enter the lagoon. During winter and spring high tides, the gates will be pumped full of air and rise up almost every day for 4/5 hours to block water surging into the lagoon.

Figure 7d

The MOSE Sea Defence Project, Venice

Every effort has been made to contact copyright holders to obtain their permission for the use of copyright material. Pearson Education Ltd. will, if notified, be happy to rectify any errors or omissions and include any such rectifications in future editions.