

Paper Reference 4GE1/01R
Pearson Edexcel
International GCSE (9–1)

Geography

PAPER 1: Physical geography

Monday 22 May 2023 – Afternoon

Time: 1 hour 10 minutes

Resource Booklet

**Do not return this Resource Booklet with
the Question Paper.**

V71195A

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For some Figures there is a modified colour and modified black and white diagram. You may use whichever version is easier for you to view. Some diagrams are only in modified colour but you are then provided with a description of the diagram.

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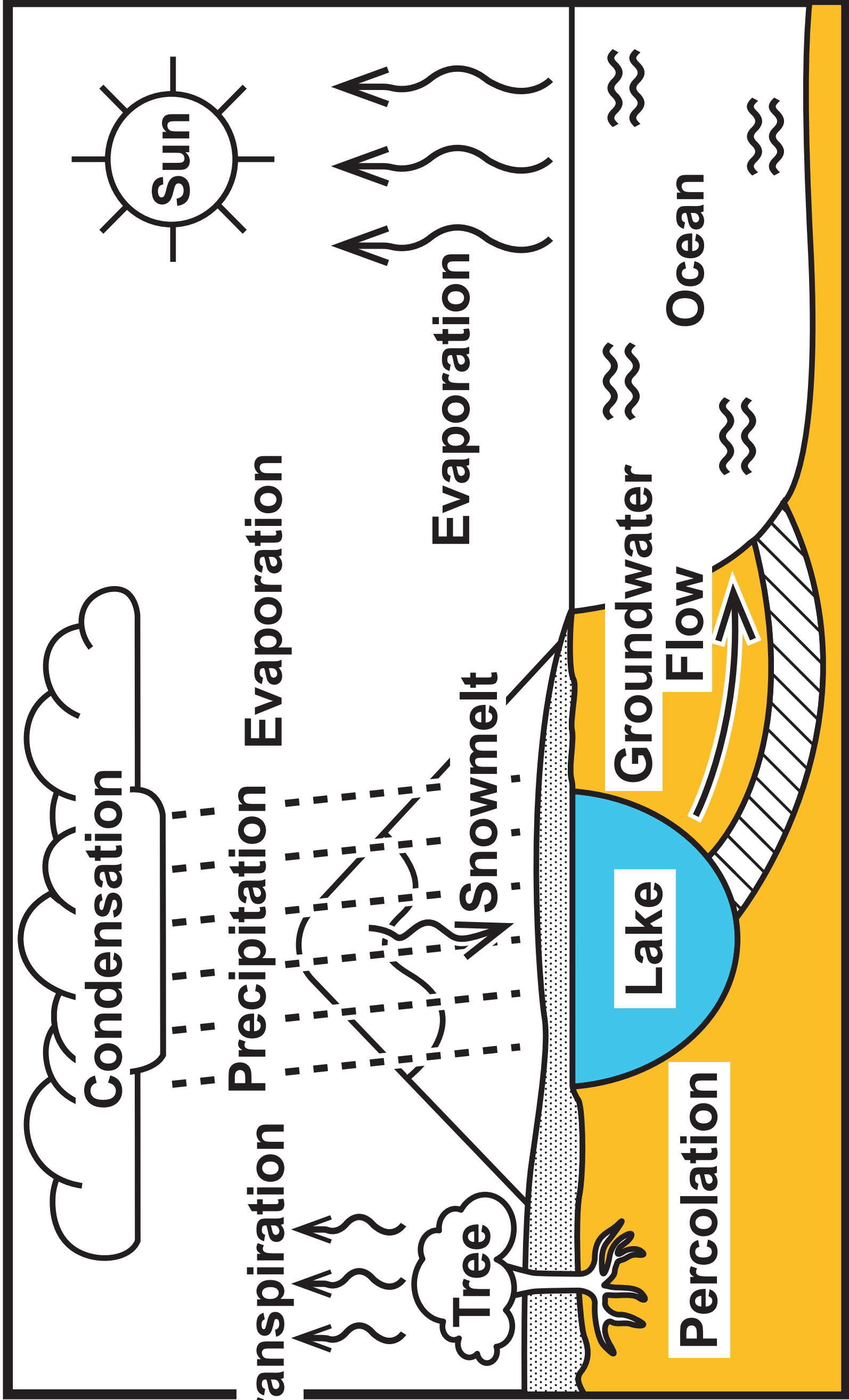
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The hydrological cycle



Key

	Grass		Underground		Mountain		Clouds
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Turn over

The hydrological cycle

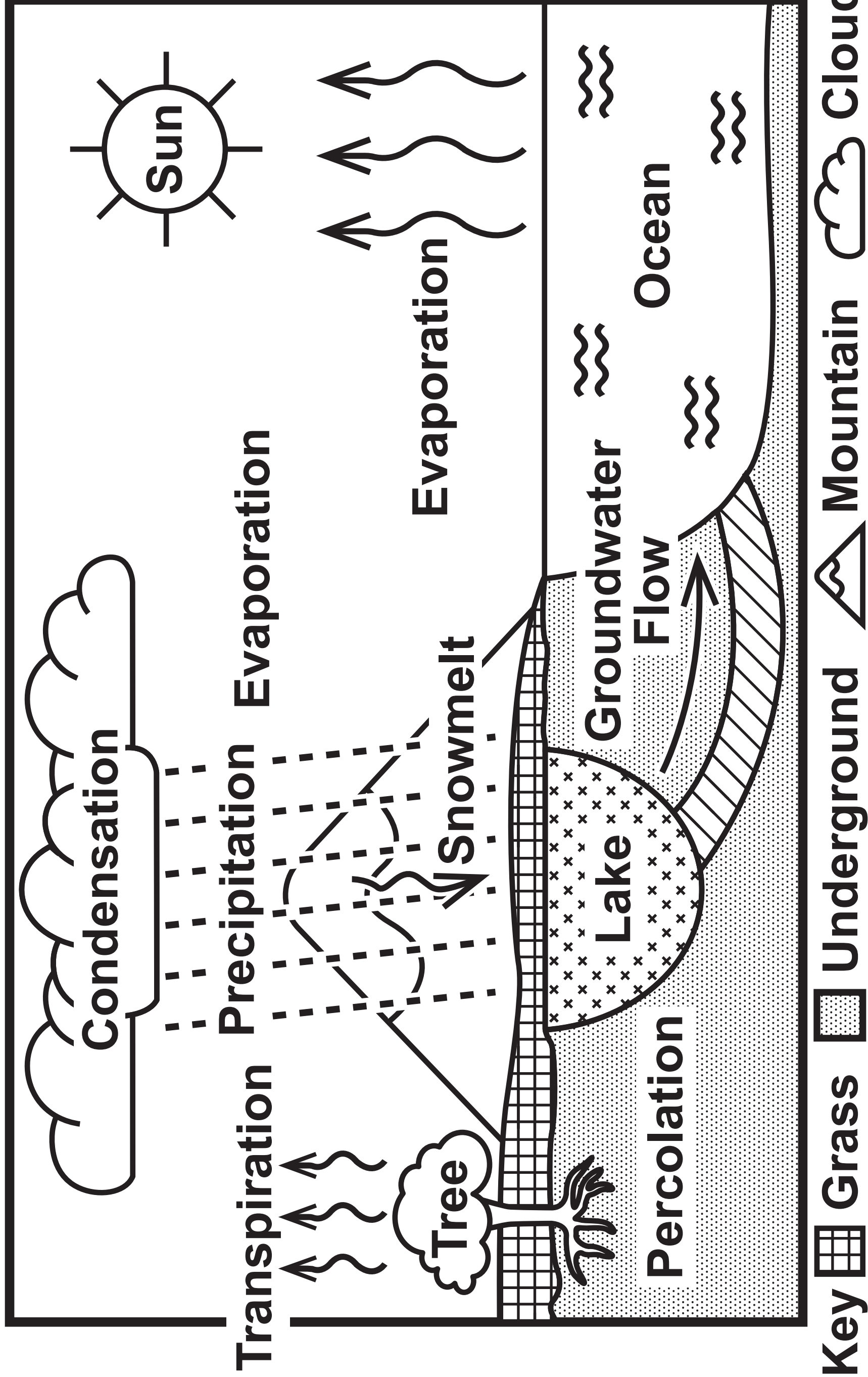
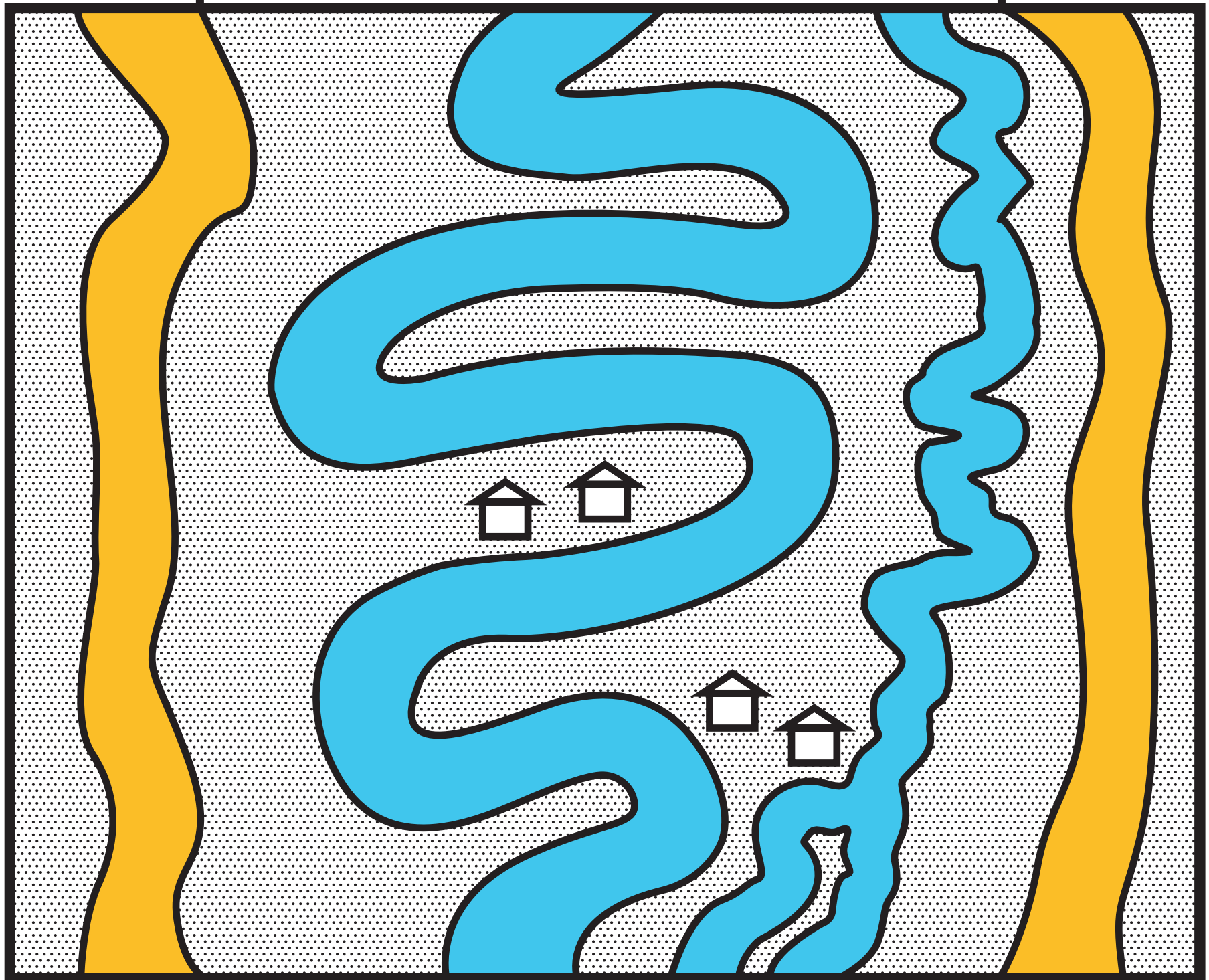


Figure 1b – Colour (Part 1)

River features

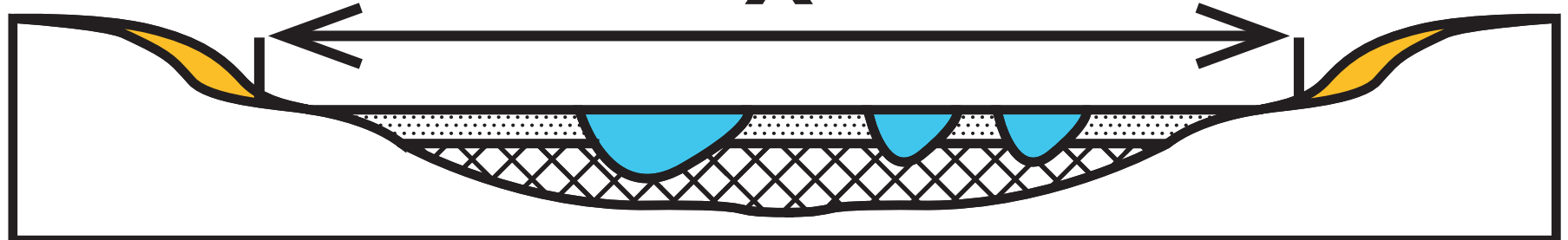
Top View

X



Side View

X



Key River Valley sides Grass
 River bed Buildings

Turn over

Figure 1b – Colour (Part 2)

River features

Top View

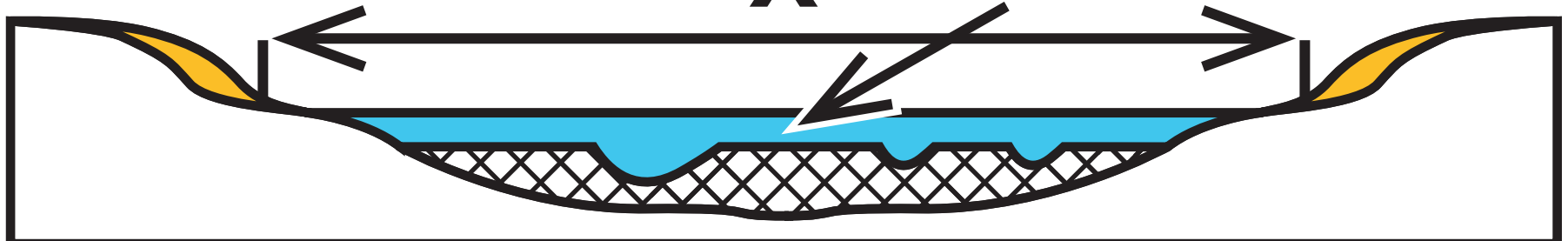
X



Side View

X

River has
burst its banks



Key River Valley sides Grass
 River bed

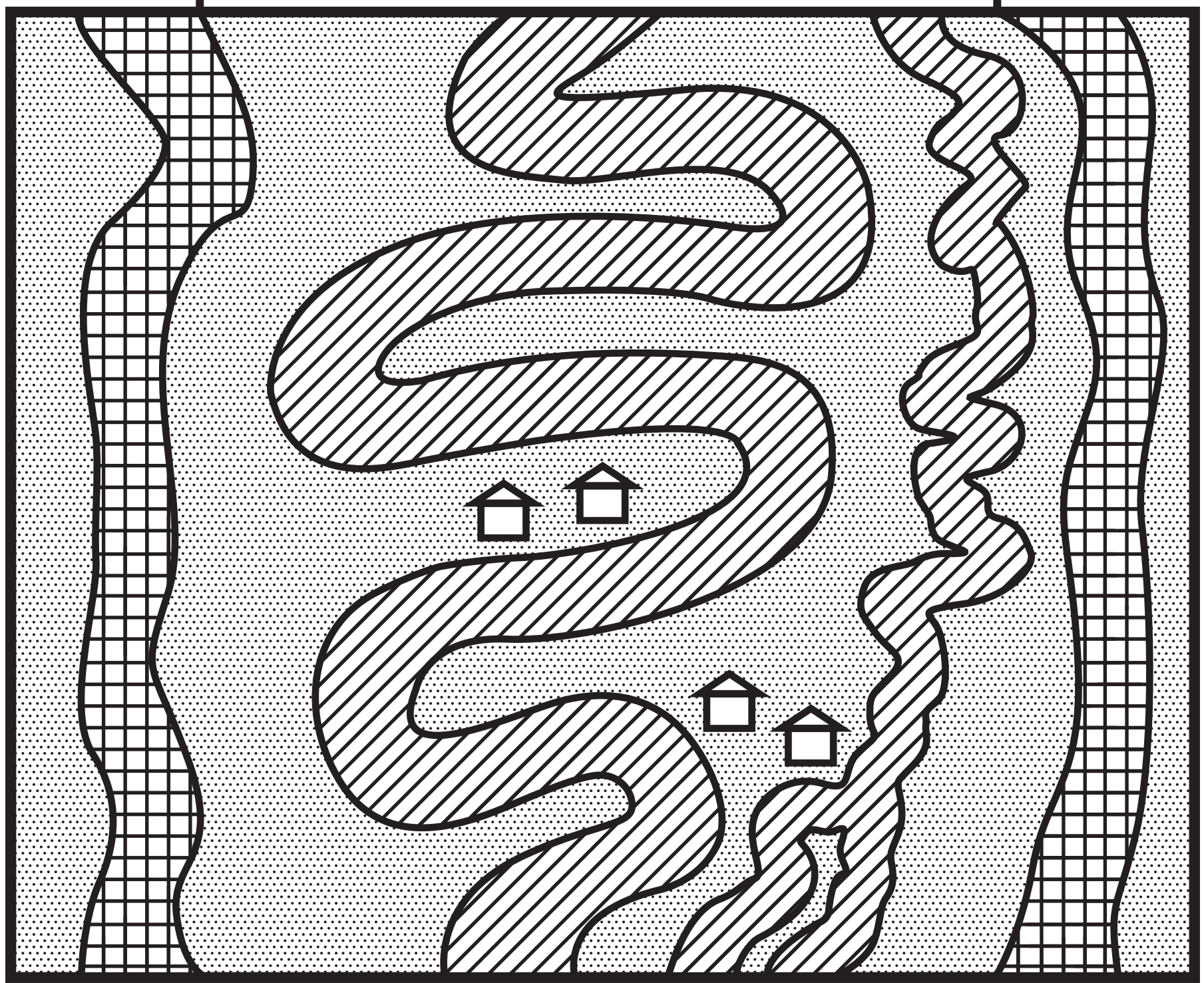
Turn over

Figure 1b – Black and White (Part 1)

River features

Top View

X



Side View

X



Key

	River		Valley sides		Grass
	River bed		Buildings		

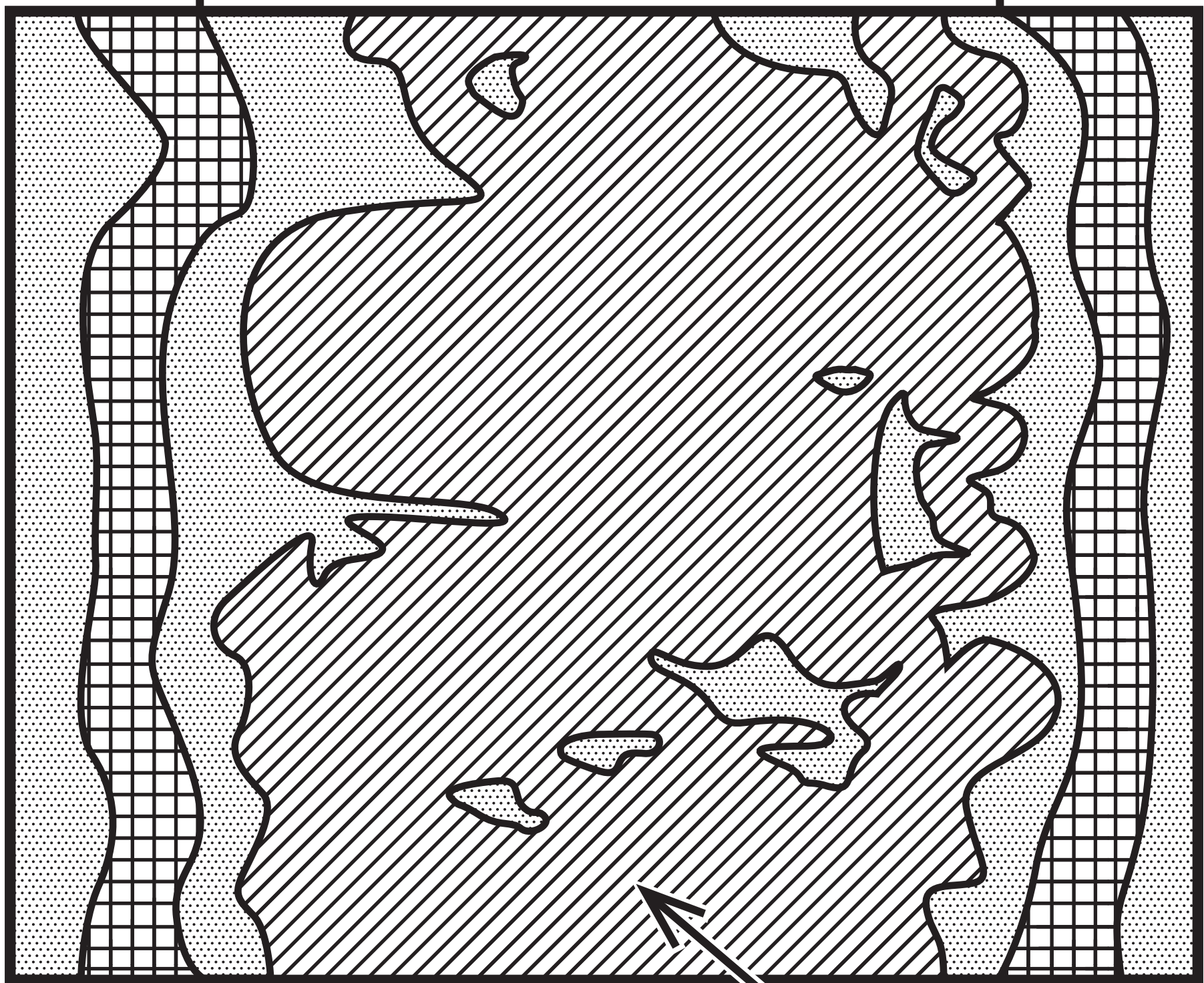
Turn over

Figure 1b – Black and White (Part 2)

River features

Top View

X



Side View

X

River has
burst its banks



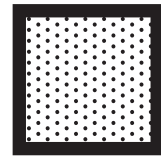
Key

	River		Valley sides		Grass
	River bed				

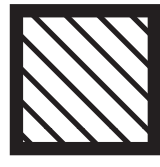
Actual and predicted rainfall for 12 days in January 2011 for River Brisbane catchment

24-hour rainfall (mm)

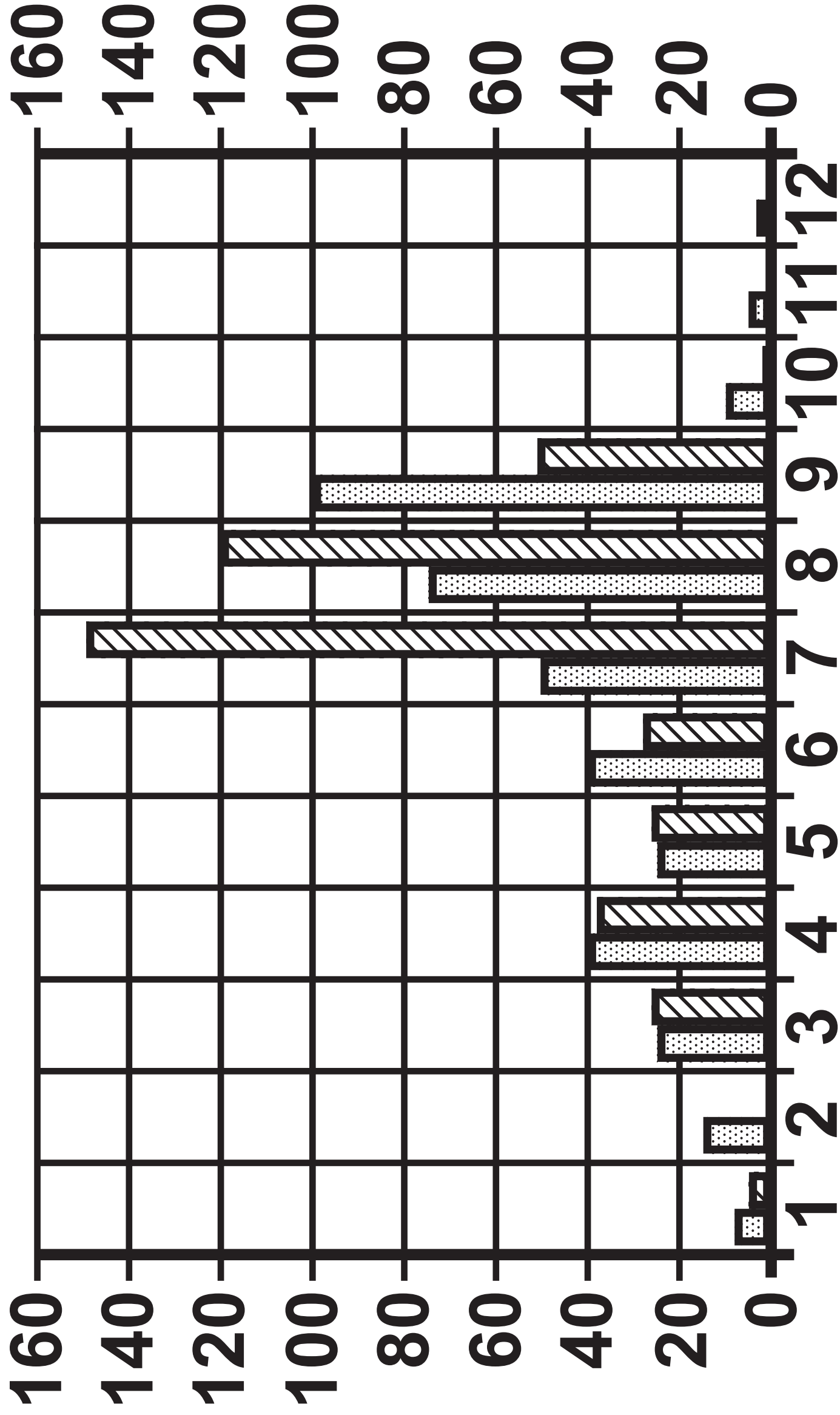
Key



Forecast



Actual



Dates in January 2011

Figure 1d – Information

**Map showing an area around
Brisbane where flooding occurred
in 2011**

BRISBANE Population: 2 million

**WIVENHOE DAM: Controlled releases to
relieve swollen flood storage.**

**BRISBANE: City centre closed. Brisbane
River forecast to peak at 5·2 metres.
20,000 homes at risk.**

PORT: Closed

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Turn over

Figure 1d – Information continued.

TOOWOMBA: Flash floods kills 12.

LOCKYER VALLEY: Around 50 people missing.

BREMER RIVER: Expected to peak at 19.5 metres.

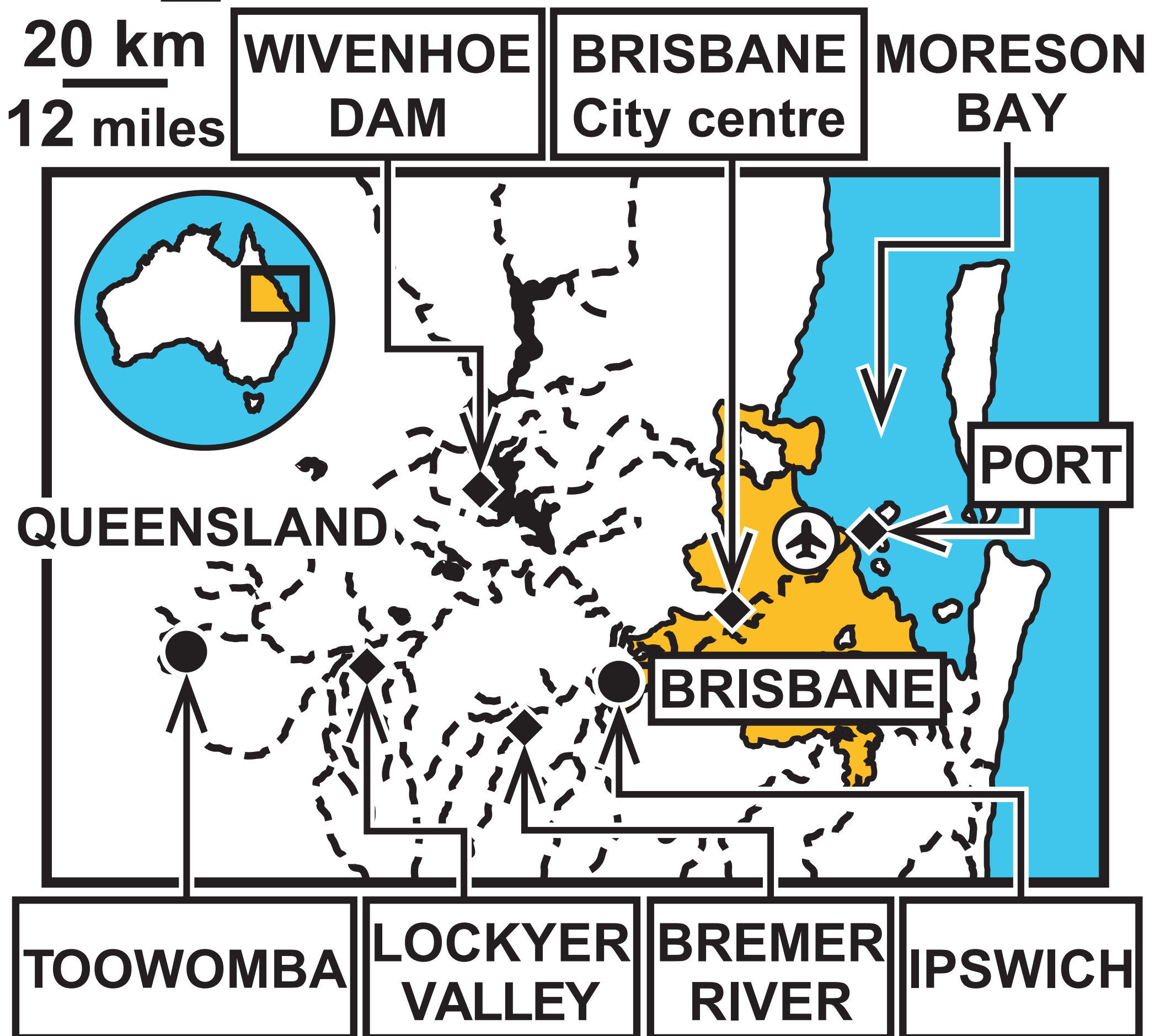
**IPSWICH: 3,000 homes inundated.
1,500 people in evacuation centres.**

Turn over

Figure 1d – Diagram (Colour)

Map showing an area around Brisbane where flooding occurred in 2011

Key  Airport  Cities  Point of interest
 Flooded area  PACIFIC OCEAN
 Lakes - - - Rivers



Turn over

Figure 1d – Diagram (Black and White)

Map showing an area around Brisbane where flooding occurred in 2011

Key  Airport  Cities  Point of interest
 Flooded area  PACIFIC OCEAN
 Lakes - - - Rivers

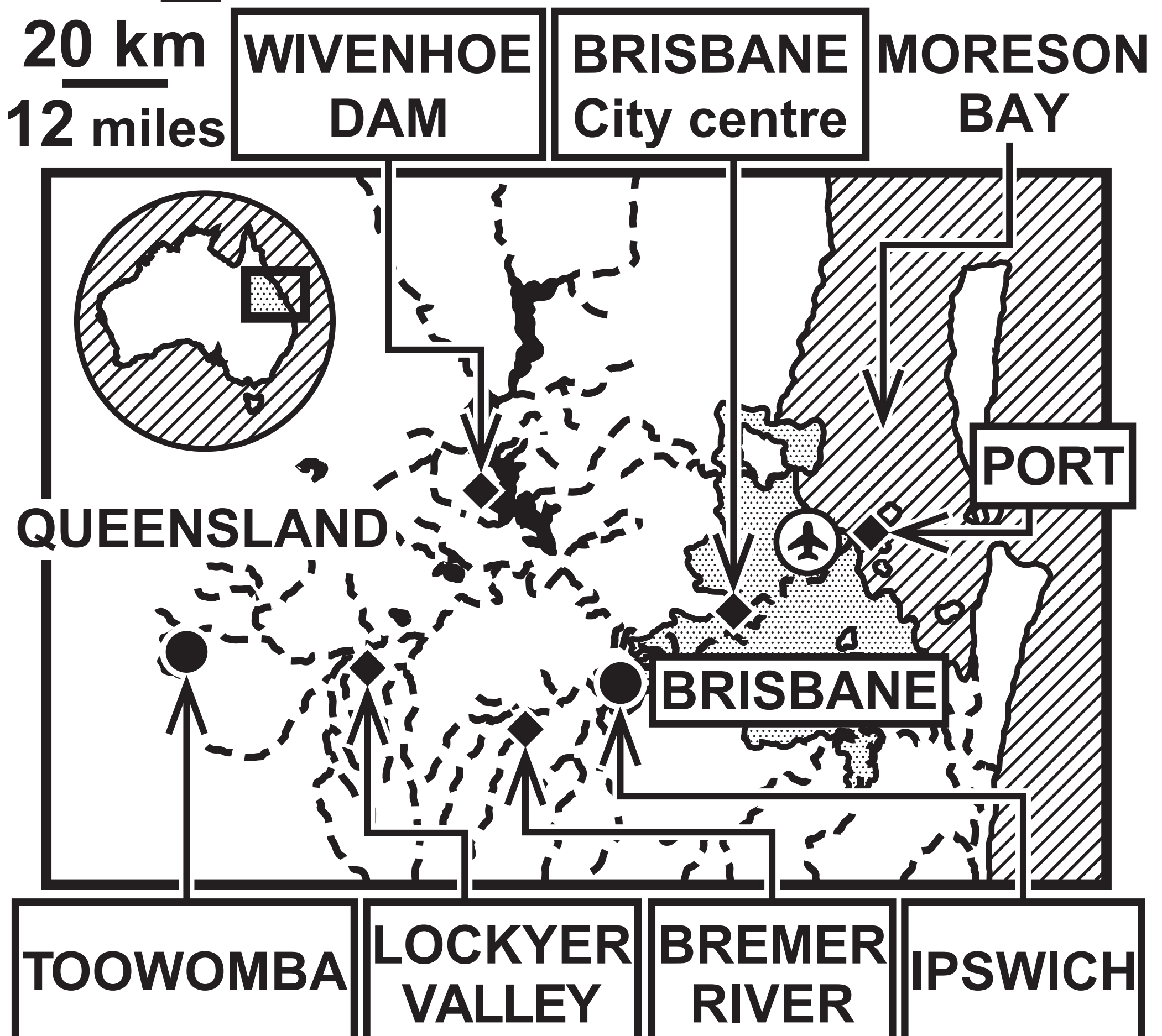
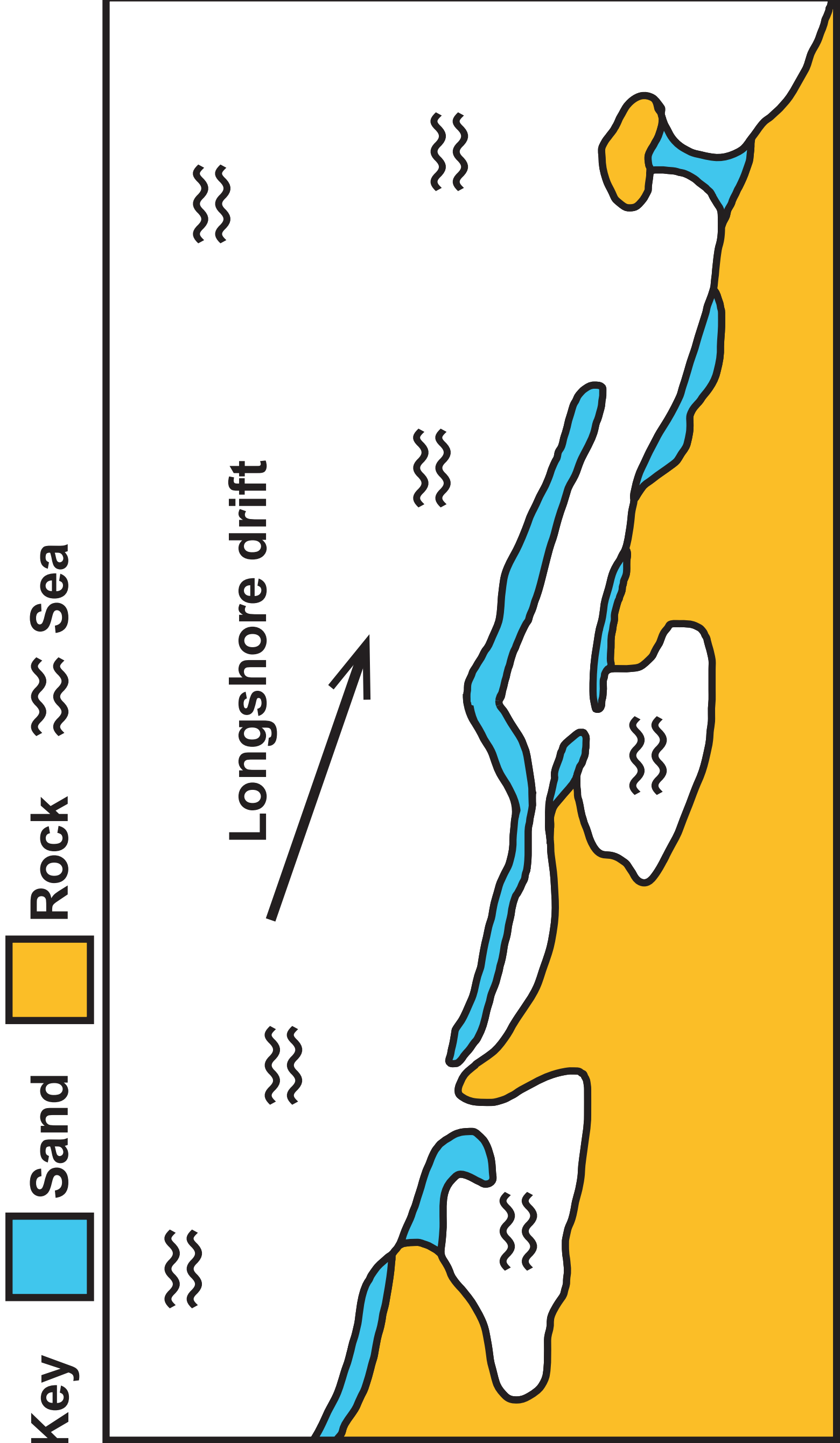


Figure 2a – Colour

Features caused by coastal deposition



Turn over

Figure 2a – Black and White
Features caused by coastal deposition

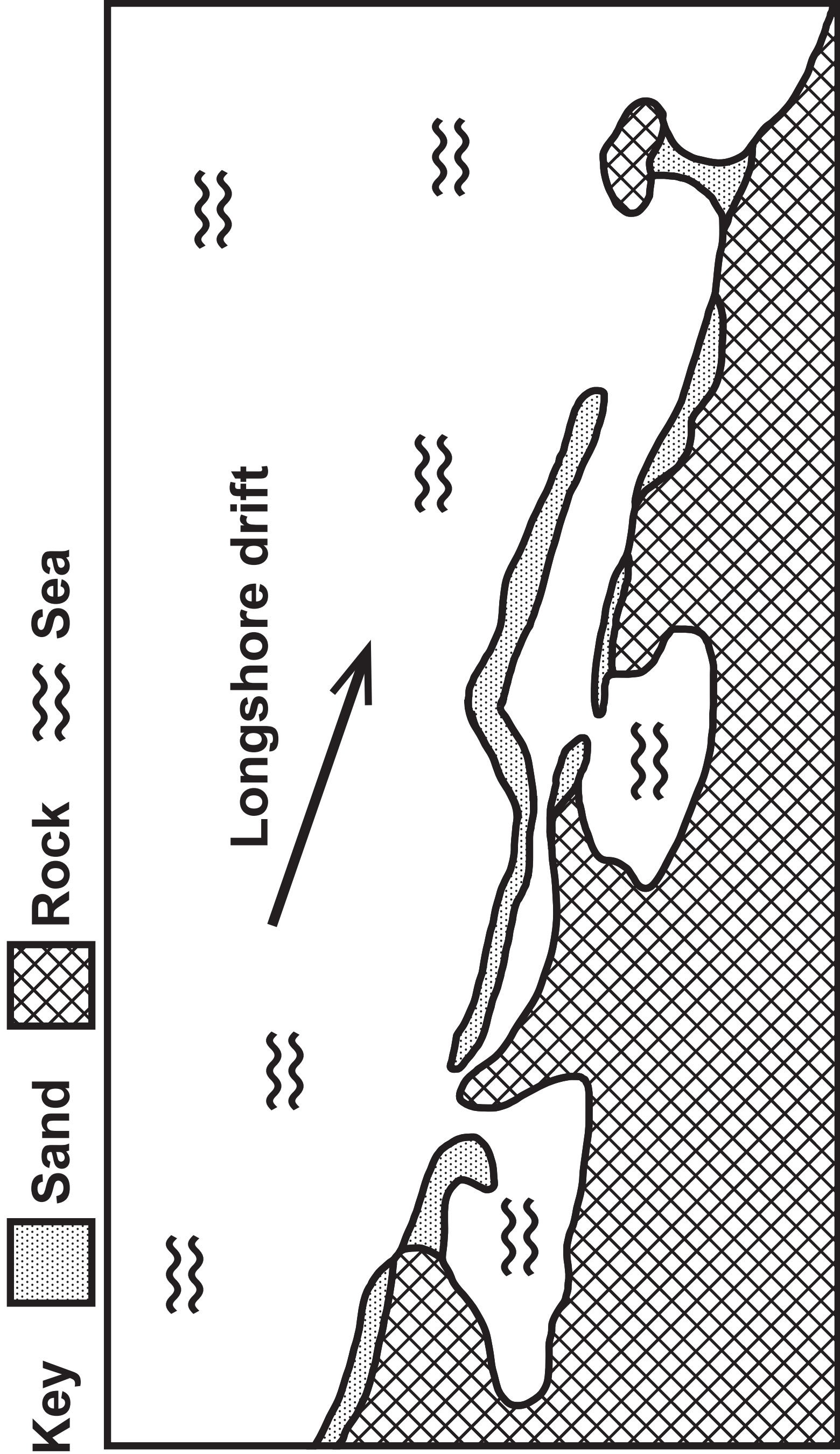
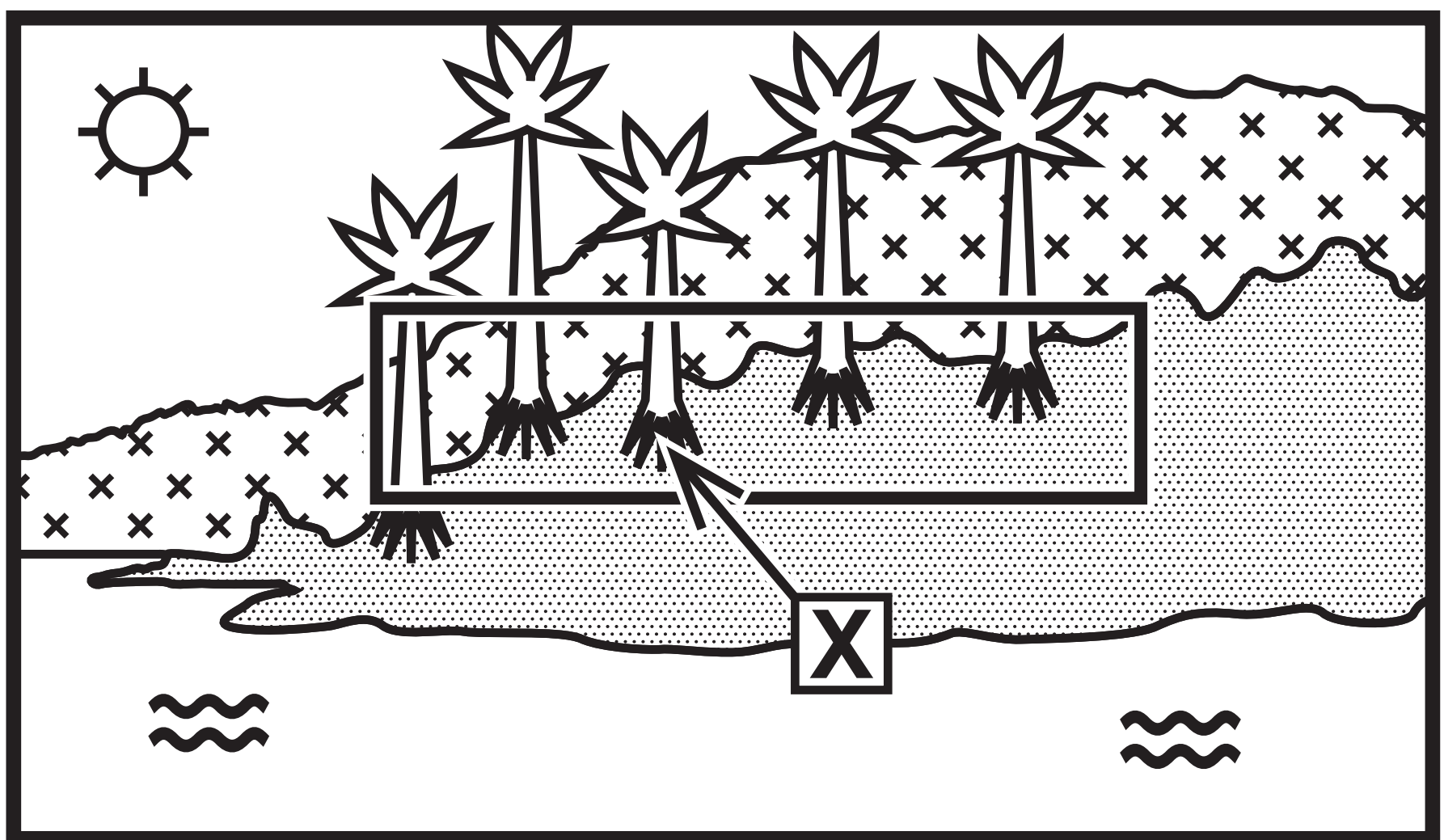
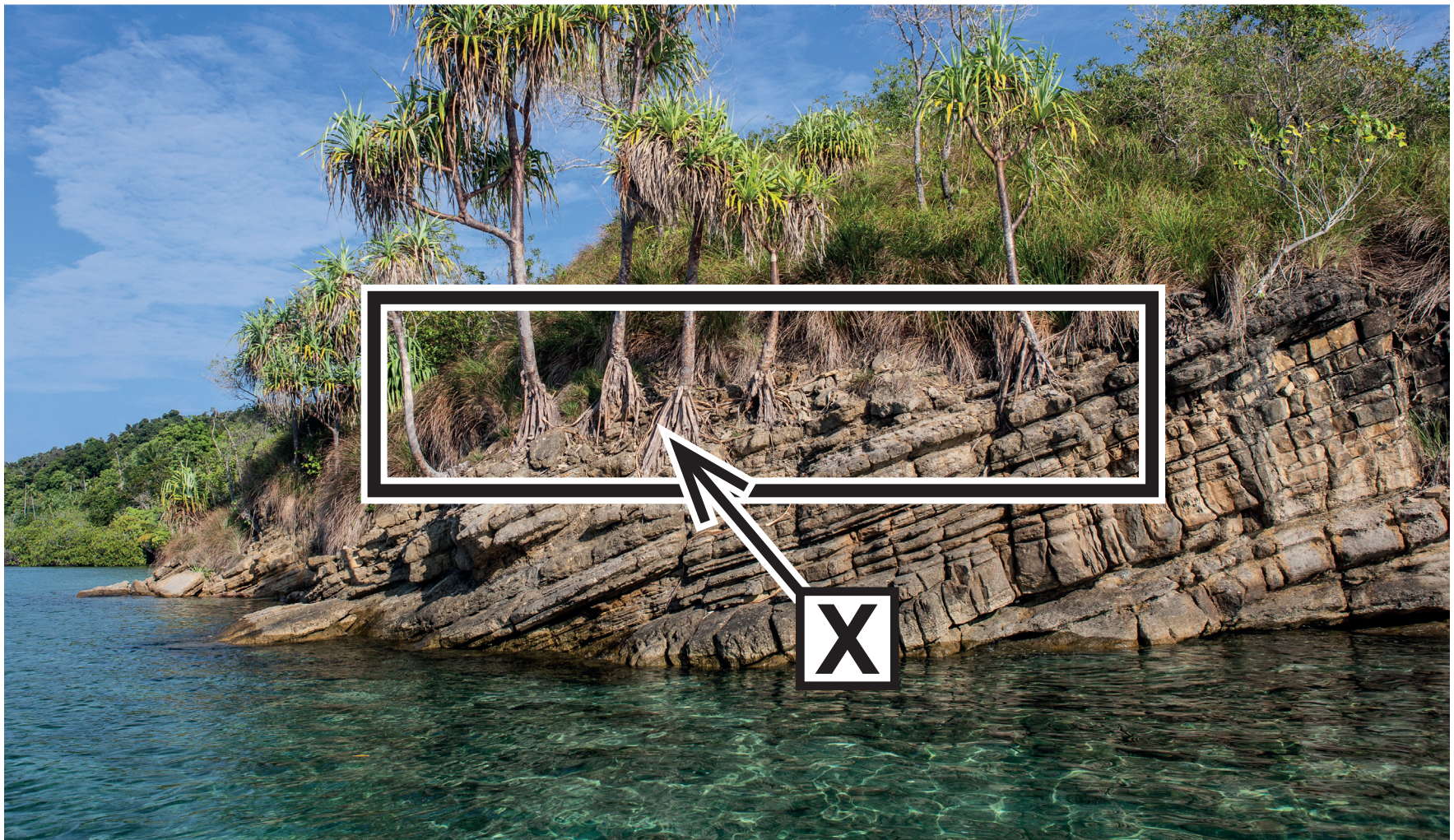


Figure 2b

A coastline in Raja Ampat, Indonesia



Key Sea Rock Trees Tree roots
 Sun Vegetation

Figure 2c

Reasons for development of coastlines

SPORT FISHING can be the main source of income for coastal communities

\$141.5 MILLION Bahamas in 2008

\$56.5 MILLION Belize in 2007

TOURISM directly employs **2,000,000 PEOPLE** in the Caribbean Islands – 1 in 10 Residents

Recreational fishing around **MANGROVES** contributes **\$1 BILLION** per year toward Florida's economy

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Turn over

Figure 2c continued.

**At prime scuba diving spots in Palau
A SINGLE SHARK has a lifetime value
of \$1.9 MILLION and a fished value of
\$108**

**HEALTHY OCEAN HABITATS
attract the divers, snorkellers and other
tourists who drive coastal economies**

**CORAL REEFS drive up to
\$30 BILLION per year globally in
tourism revenue**

Figure 2d

Reasons for conservation of coastlines

OYSTER REEFS save communities
\$85,000 per year per hectare when used
in place of artificial breakwaters

MANGROVES REDUCE 66% of
wave height – easing erosion and flood
risk

CORAL REEFS REDUCE 97% of
wave energy acting as a barrier from
storms

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Turn over

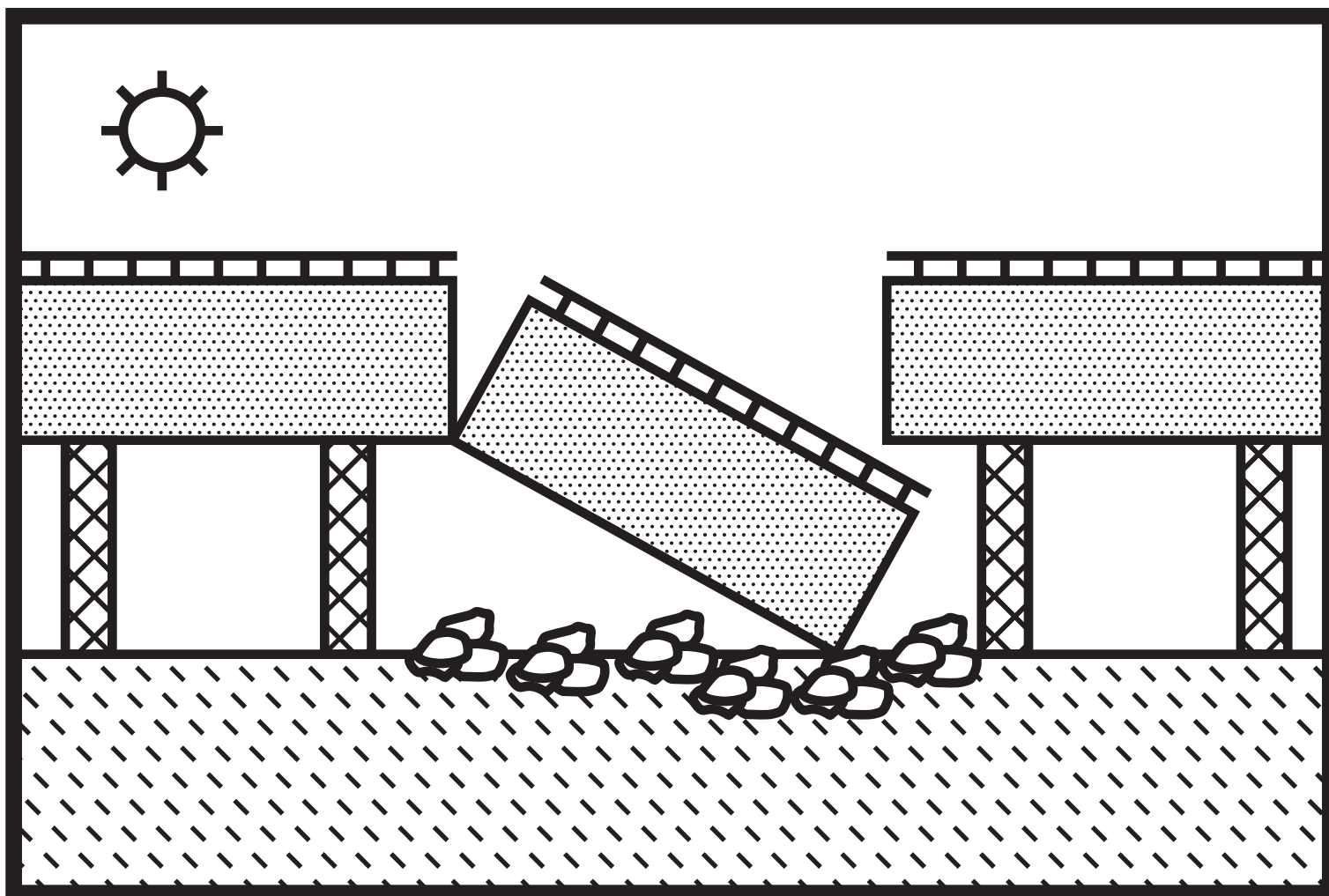
Figure 2d continued.

CORAL REEFS provide the first line of defence for **63,000,000 PEOPLE GLOBALLY**

NATURAL BARRIERS save money and reduce impacts of storms, erosion and flooding to coastal communities

Figure 3a – Part 1

Earthquake impacts

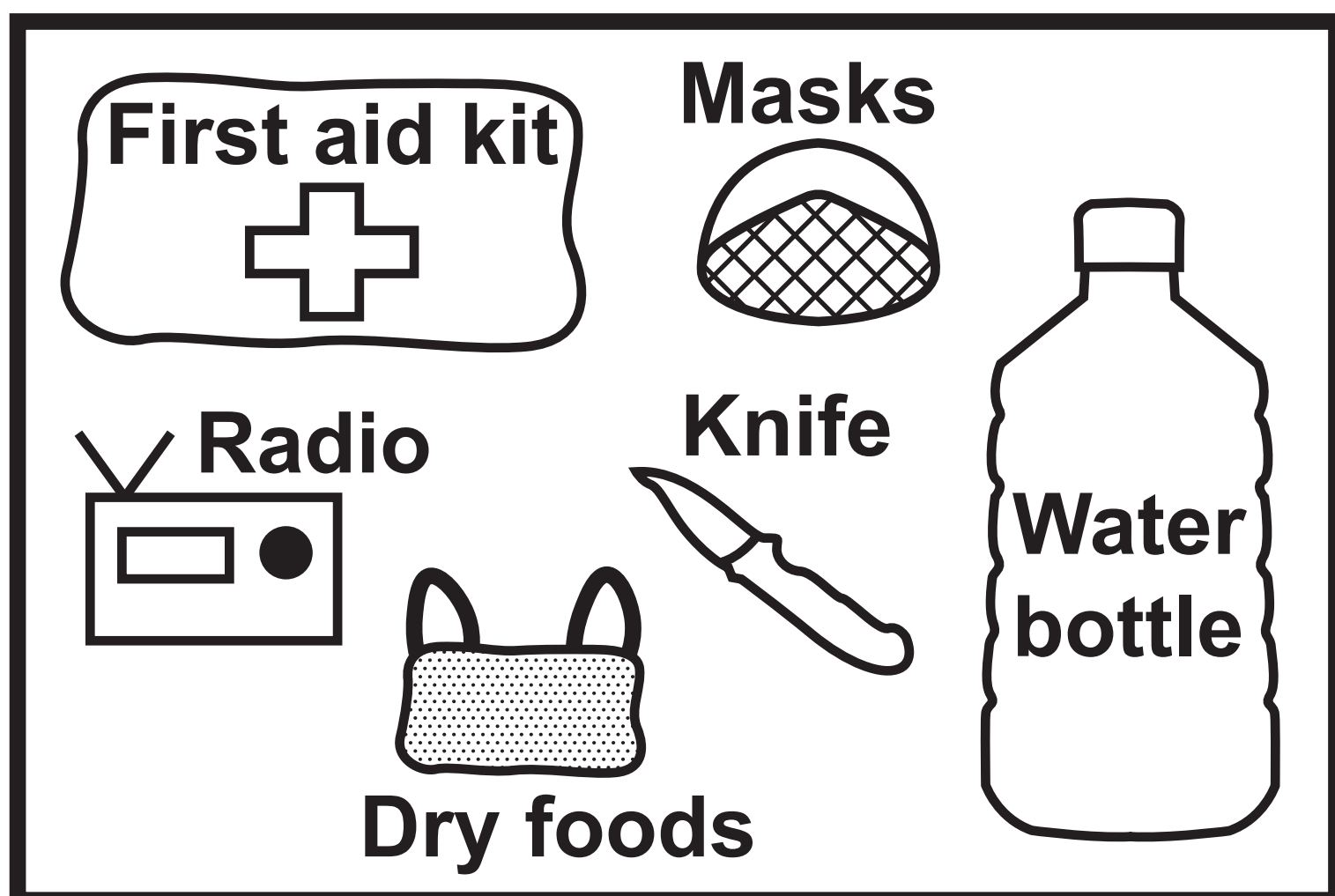


Key  **Bridge**  **Columns**  **Road**
 **Railings**  **Rubble**  **Sun**

Turn over

Figure 3a – Part 2

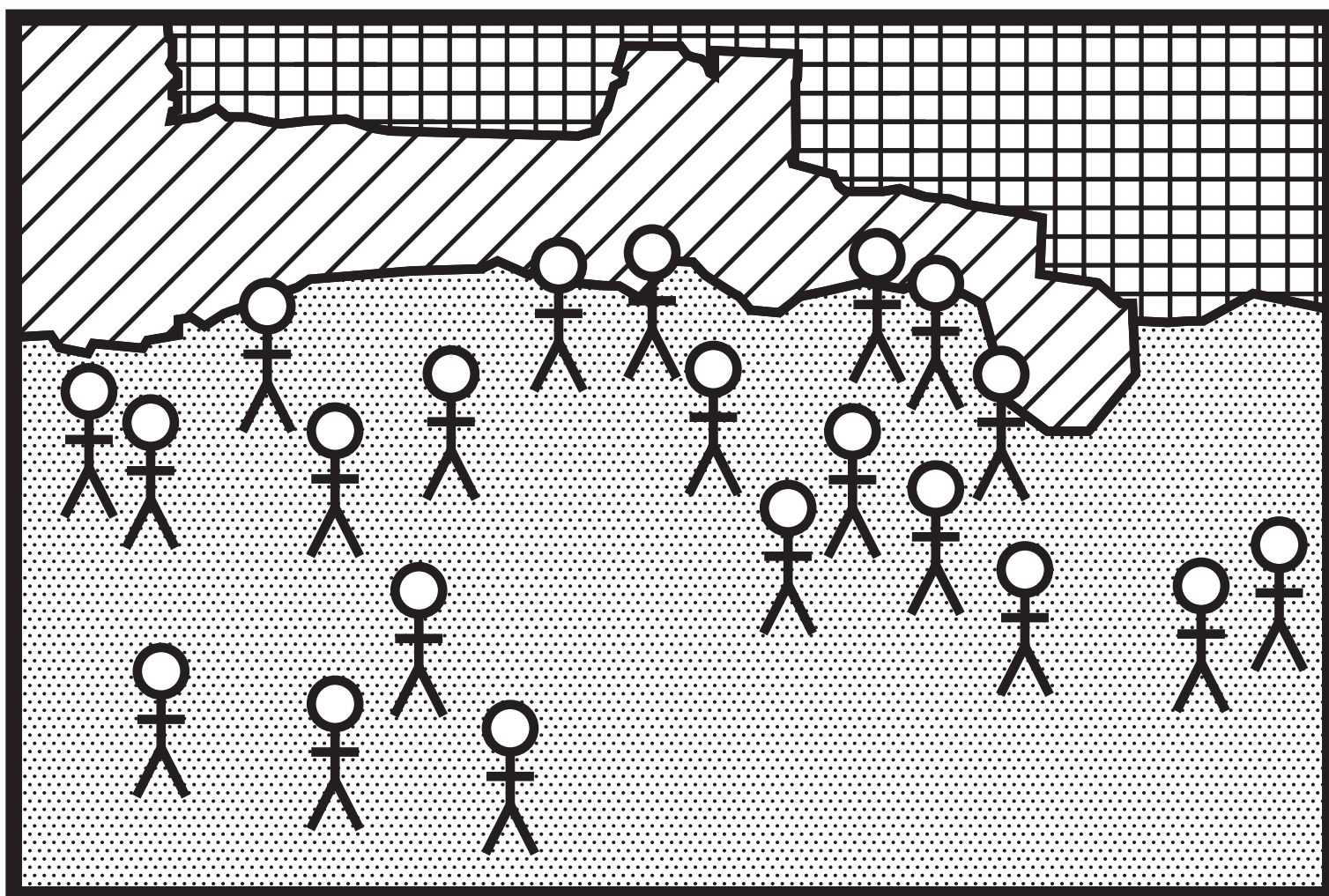
Earthquake impacts



Turn over

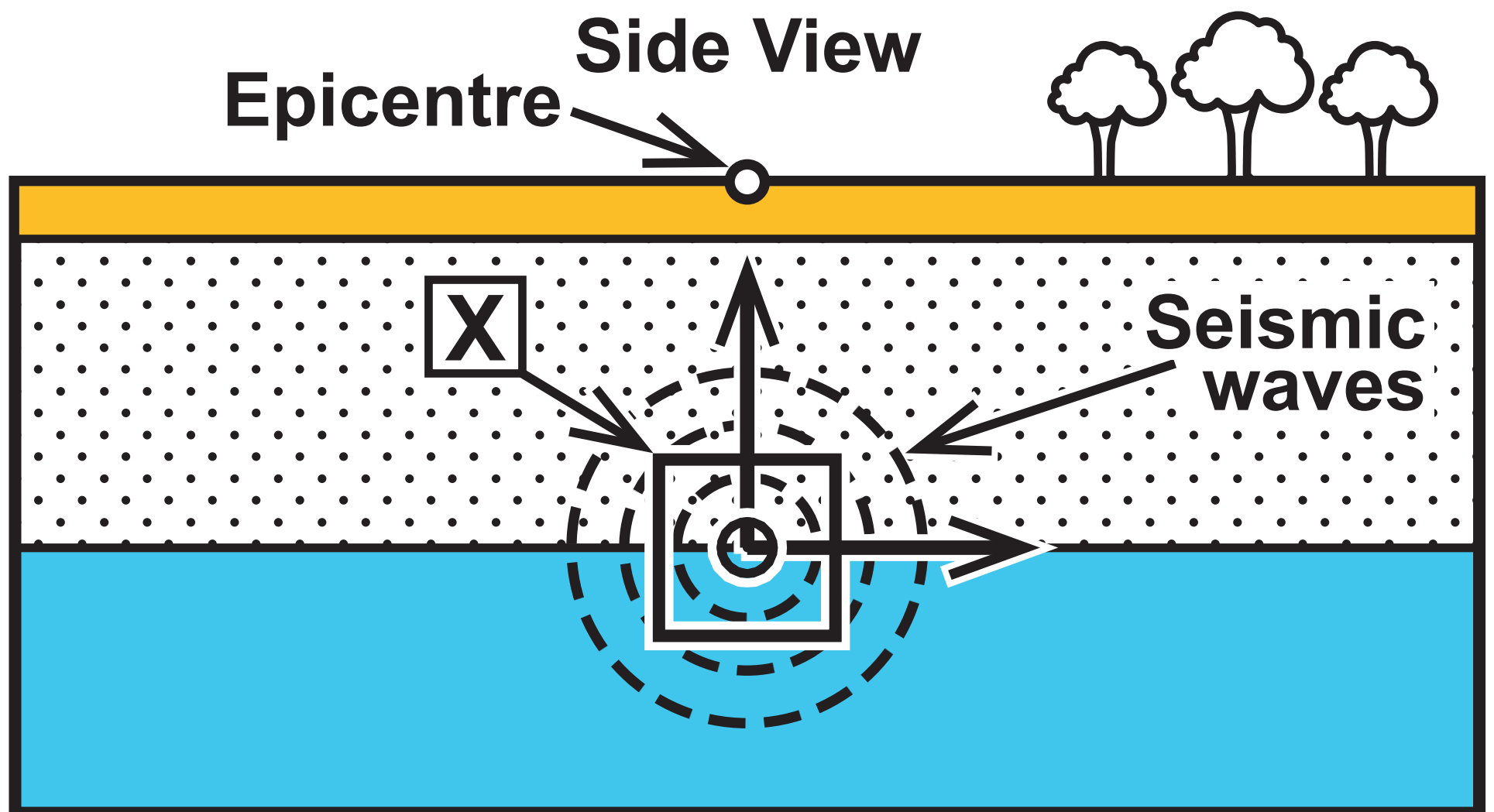
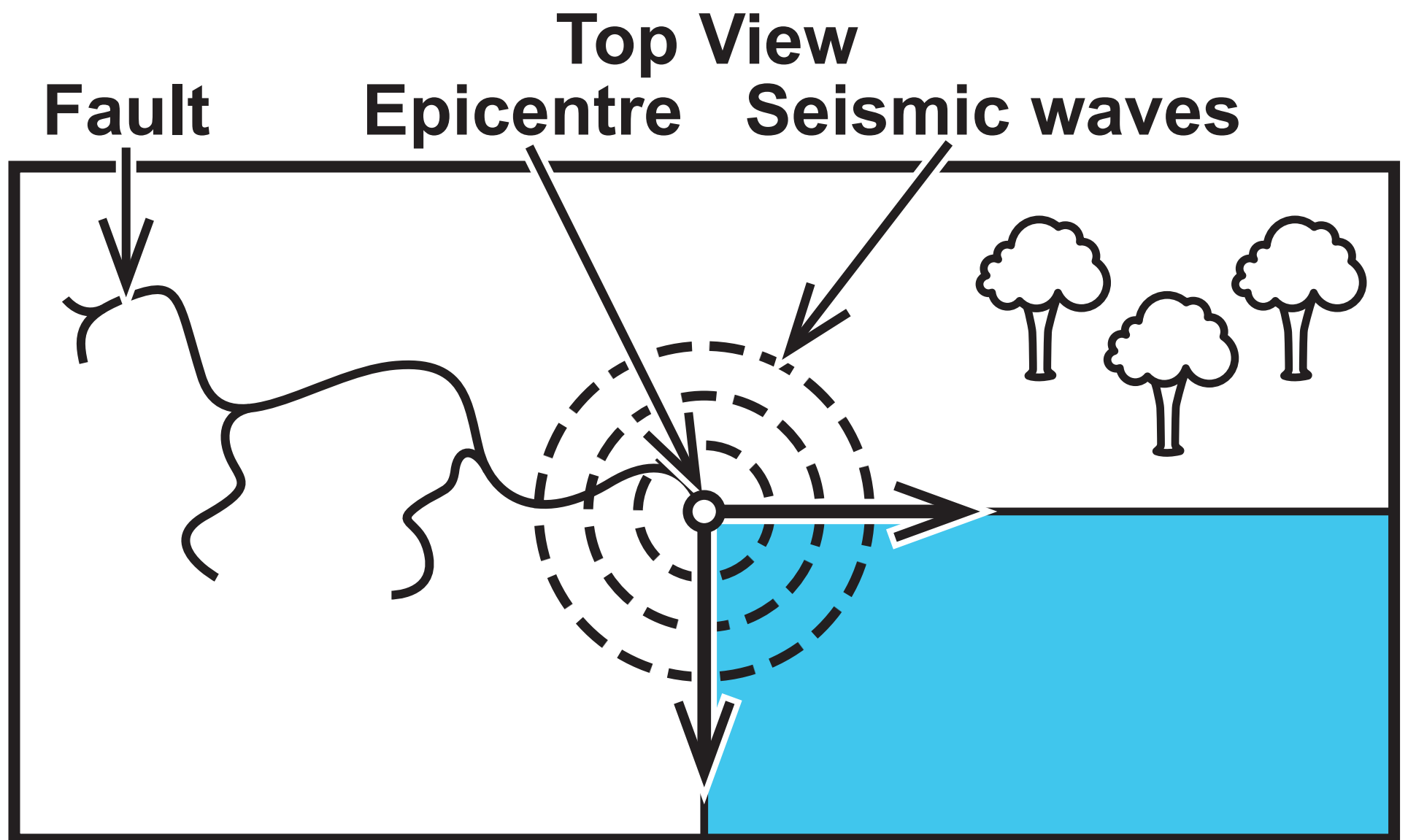
Figure 3a – Part 3

Earthquake impacts



Key  **Collapsed building**  **Rubble**
 **Buildings**  **Rescue workers**

Figure 3b – Colour Cross section of an earthquake zone

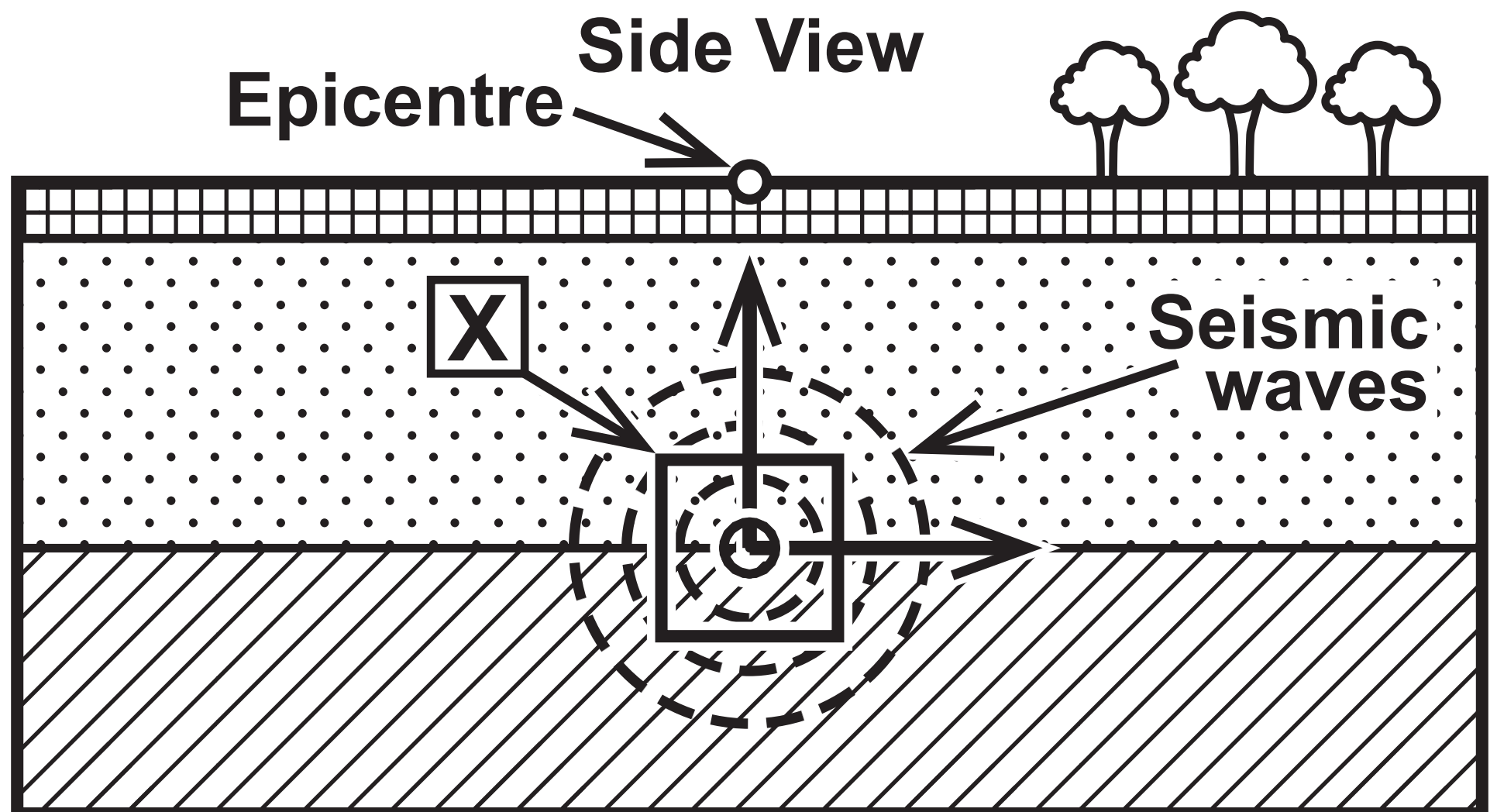
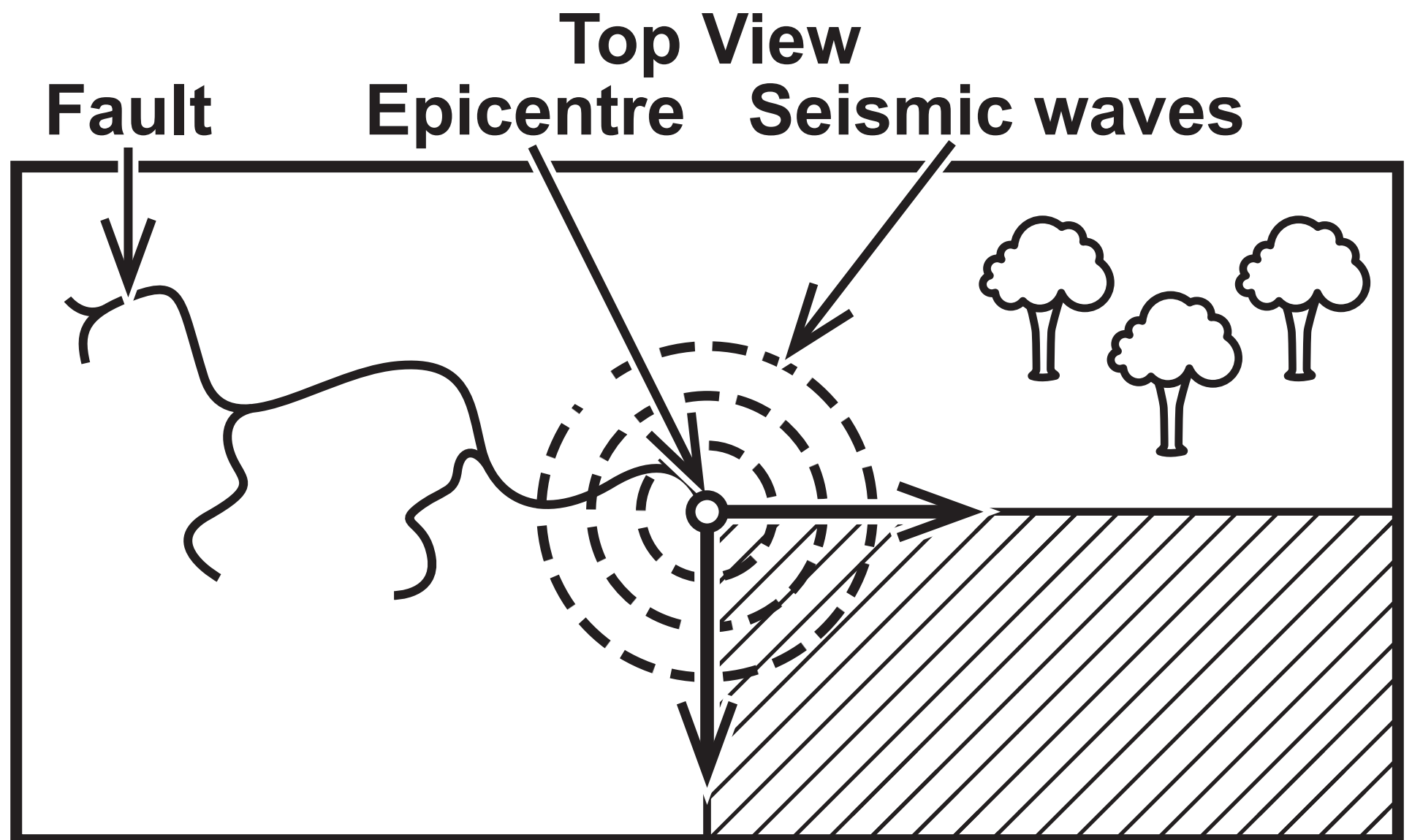


Key

Grass
 Soil
 Rock
 Mantle
 Tree

Turn over

Figure 3b – Black and White Cross section of an earthquake zone



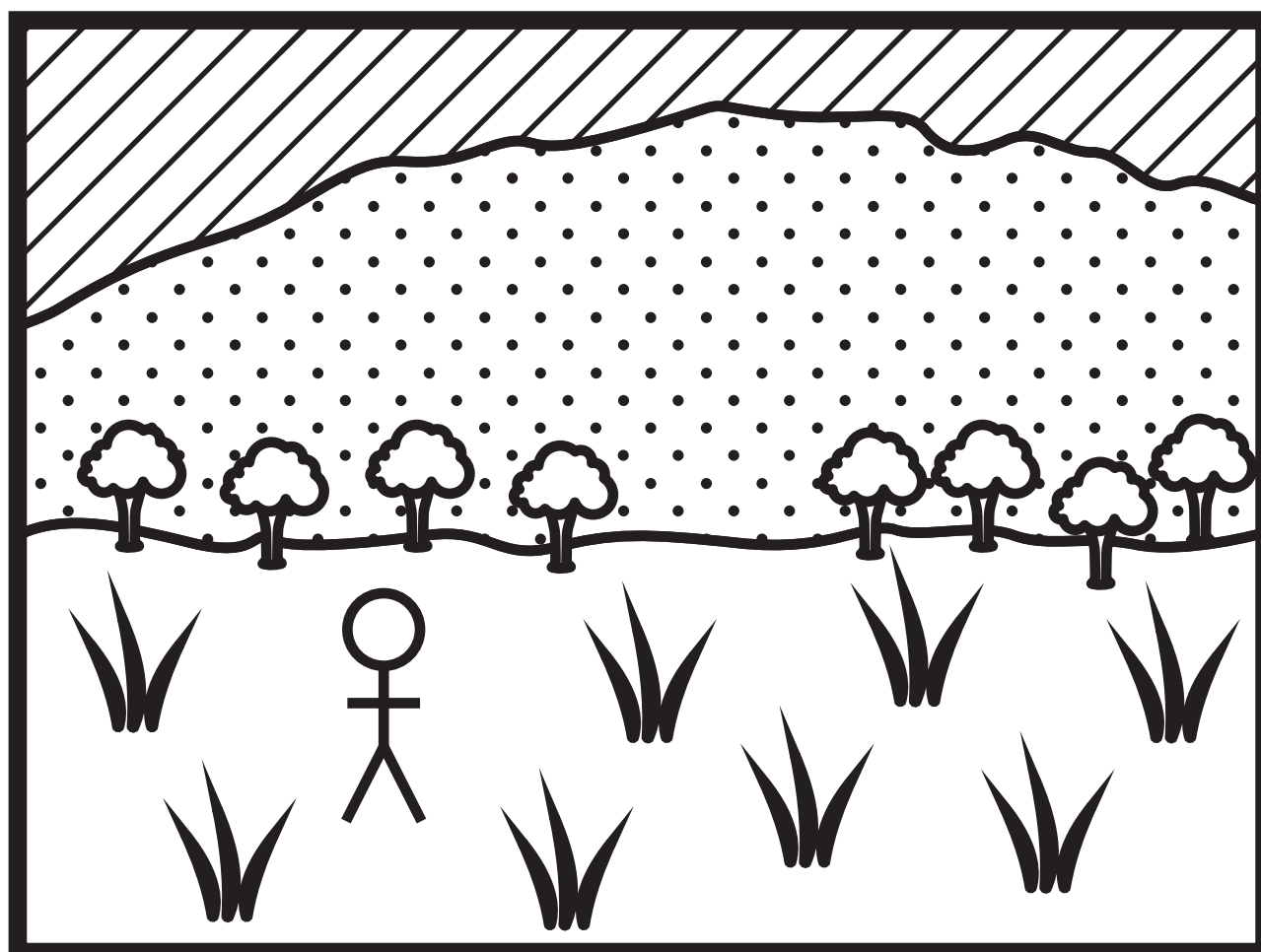
Key

Grass
 Soil
 Rock
 Mantle
 Tree

Figure 3c – Part 1

Areas prone to volcanic eruptions

Farming with fertile soil in the shadow of a volcano in Indonesia.

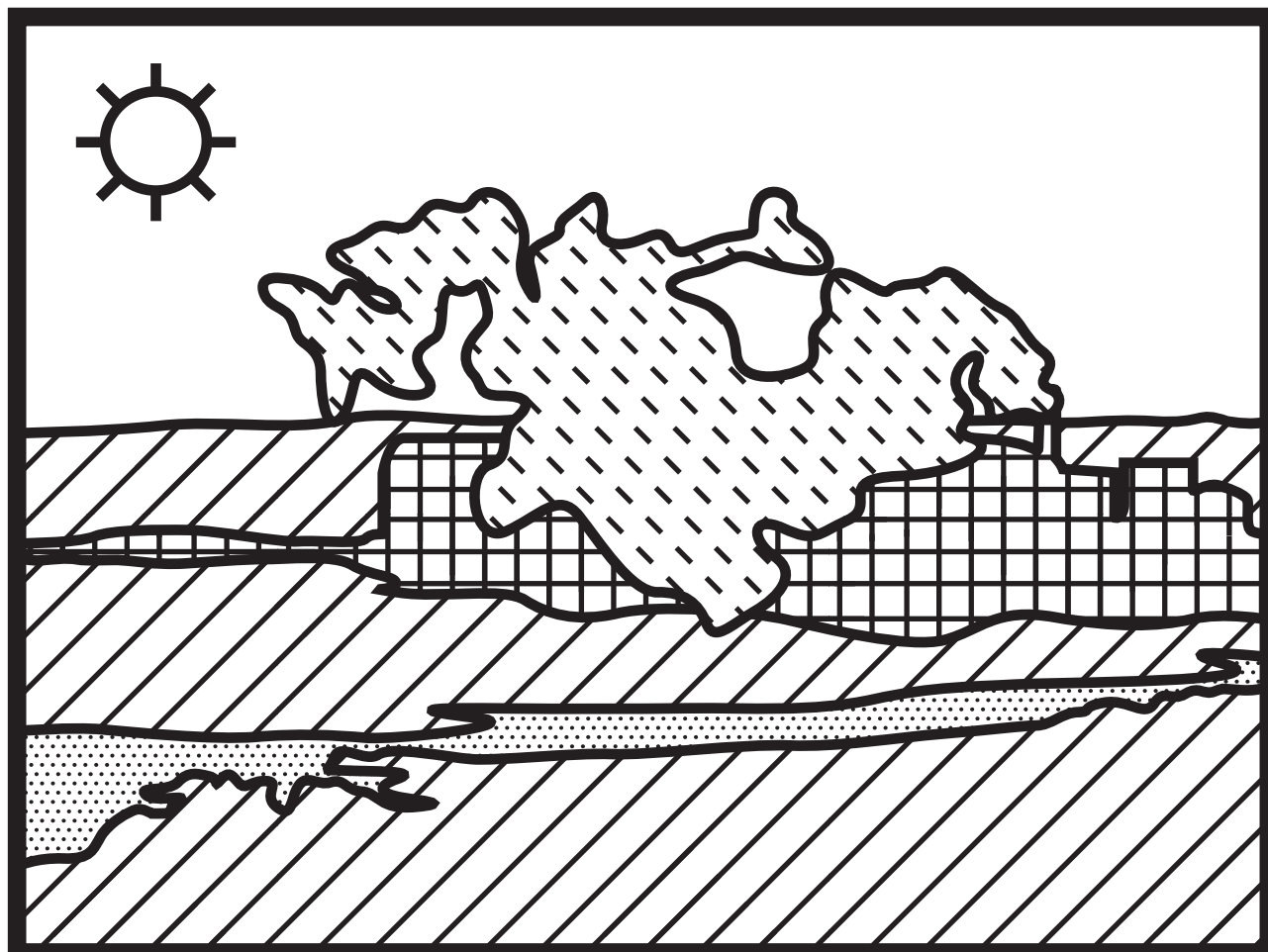


Key  Clouds  Volcano
 Farmer  Trees  Crops

Turn over

Areas prone to volcanic eruptions

Geothermal energy production from volcanic areas in Iceland.








Key  **Steam**  **Industrial buildings**
 **River**  **Vegetation**  **Sun**

Figure 3d

Responses from a range of people when asked for comment on why they continued to live in areas prone to volcanic eruptions

Country/ state	New Zealand
Role	Government scientist
GDP per capita in 1000's US \$ (2020)	42
Comment	We have excellent prediction and prevention techniques, which means we can manage the volcanic risk effectively.

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Turn over

Figure 3d continued.

Country/ state	Italy
Role	Tourism guide
GDP per capita in 1000's US \$ (2020)	32
Comment	I live by Mt Etna as it provides a source of income for my family. I would have great difficulty getting a job in tourism elsewhere.

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Turn over

Figure 3d continued.

Country/ state	Papua New Guinea
Role	Fisherman
GDP per capita in 1000's US \$ (2020)	3
Comment	We have no choice. We cannot afford to go anywhere else. If the volcano erupts that is our fate.

Figure 4a

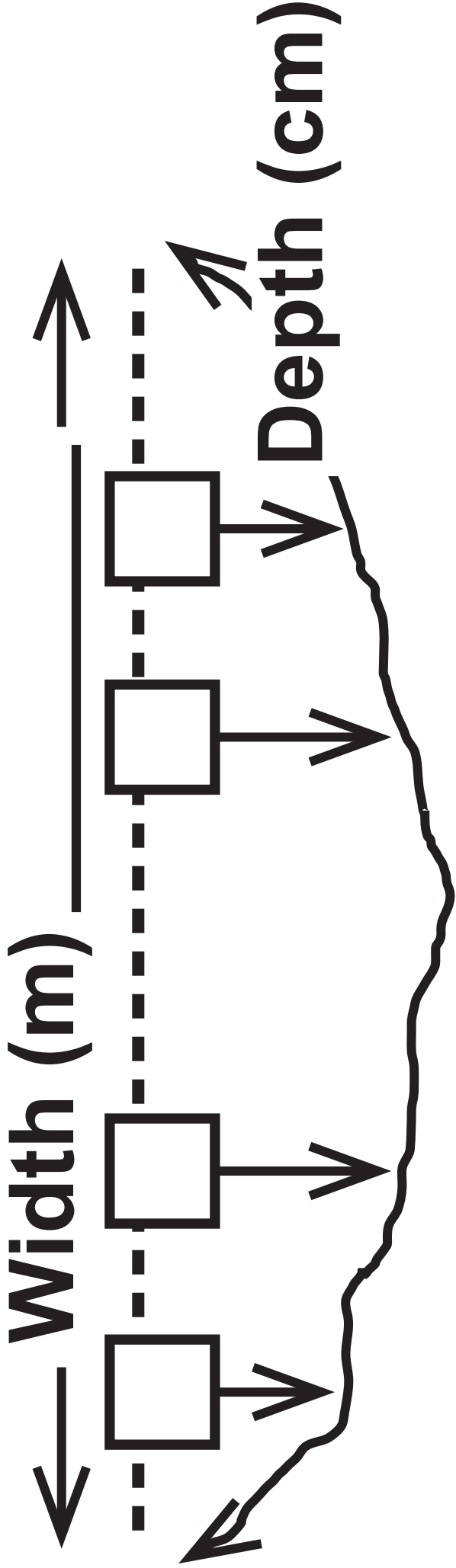
Information on the student's data collection methods

- **Choose 5 sites along a river, at 300 metre intervals.**
- **Measure river depth, width and velocity.**
- **Record sediment characteristics.**
- **Identify land use and draw a field sketch.**

Figure 4b
Data collection sheet

River fieldwork recording sheet

- Measure river depth.



MEAN DEPTH (m) _____

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Turn over

Figure 4b continued.

- Measuring river velocity.

Site	1	2	3	4	5
Distance					
Time					
Velocity					

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Figure 4b continued.

- Measure sediment size and roundness at each site.

Site	1	2	3	4	5
Sediment size (cm)					
Sediment roundness					

Figure 5a

Information on the student's data collection methods

- **Choose 5 sites along a beach, at 300 metre intervals.**
- **Measure slope angle to make beach profiles.**
- **Record any coastal management techniques.**
- **Record sediment characteristics.**

Figure 5b

Data collection sheet

Beach profile recording sheet

- Measure angle at every change in the gradient of the beach.

	Angle (°)	Distance between ranging poles (m)
1		
2		
3		
4		
5		

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Turn over

Figure 5b continued.

- Measure sediment size and roundness at each site.

Site	1	2	3	4
Pebble size (cm)				
Pebble roundness				

Figure 6a

Information on the student's data collection methods

- **Choose 5 sites at 500 metre intervals moving away from the school.**
- **Measure temperature, humidity and windspeed.**
- **Measure rainfall.**
- **Record land use.**

Figure 6b
Data collection sheet

Weather characteristics recording
sheet

- Measure rainfall and humidity at each site every day for 2 weeks.

	Rainfall (mm)	Humidity (mb)
1		
2		
3		
4		
5		

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Turn over

Figure 6b continued.

- Record land use and windspeed at each site.

Site	Land use	Windspeed (km/h)
1		
2		
3		
4		

Acknowledgements:

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

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Figure 2d has been adapted from:

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