

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

Geography

PAPER 1: Physical geography

Time: 1 hour 10 minutes

Resource Booklet

Do not return this Resource Booklet with the Question Paper.

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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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Figure 1a – Information

Details about flood prevention measures in York, UK

- **The height of flood defences (hard engineering) in the area are being increased to protect 56 homes and businesses from flooding**
- **To build the new flood defences 14 trees must be removed**

Figure 1a – Diagram (Colour)

Details about flood prevention measures in York, UK

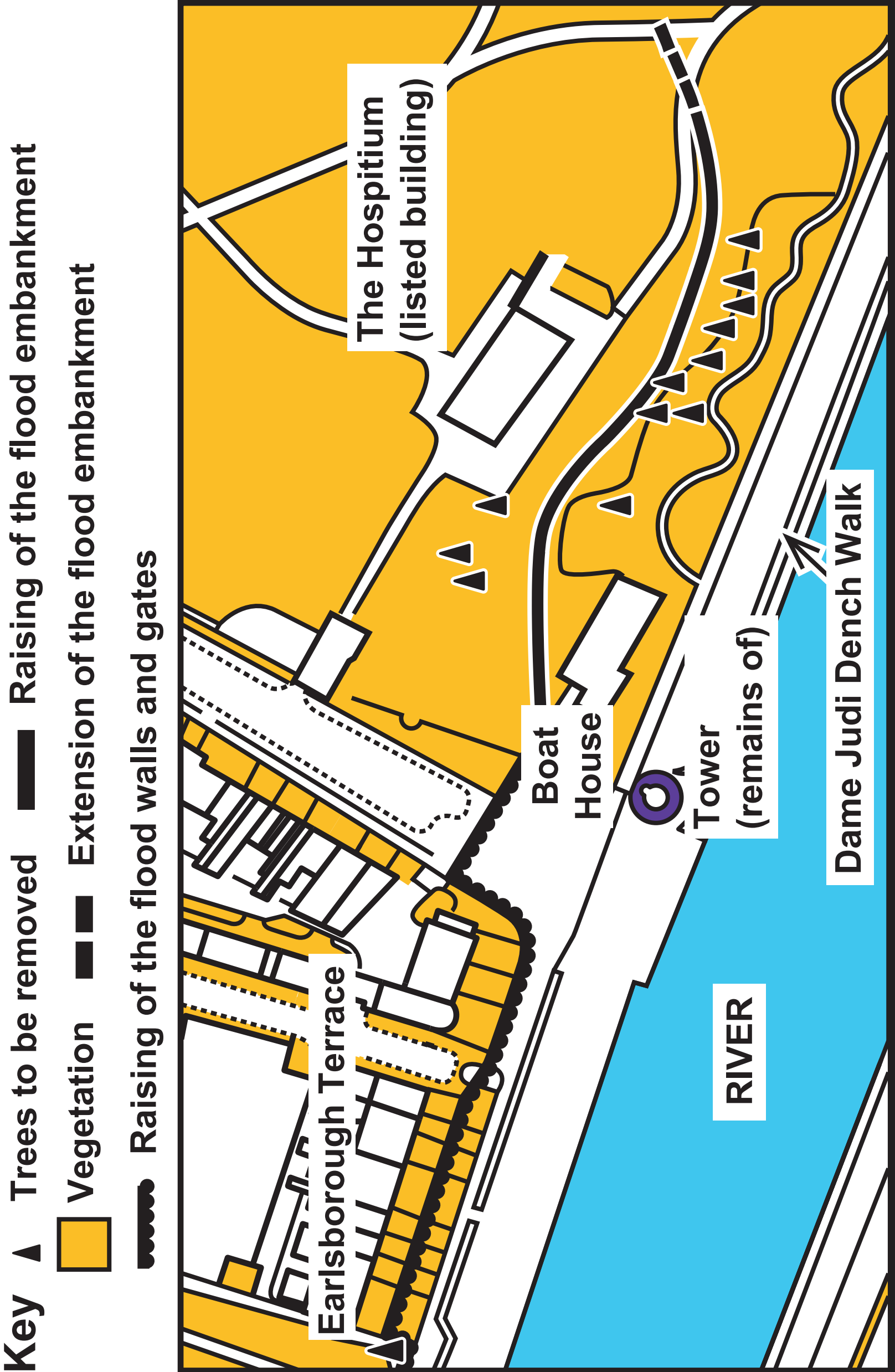


Figure 1a – Diagram (Black and White)

Details about flood prevention measures in York, UK

- Key**
- ▲ Trees to be removed
 - Raising of the flood embankment
 - ▨ Vegetation
 - Extension of the flood embankment
 - ⚡ Raising of the flood walls and gates

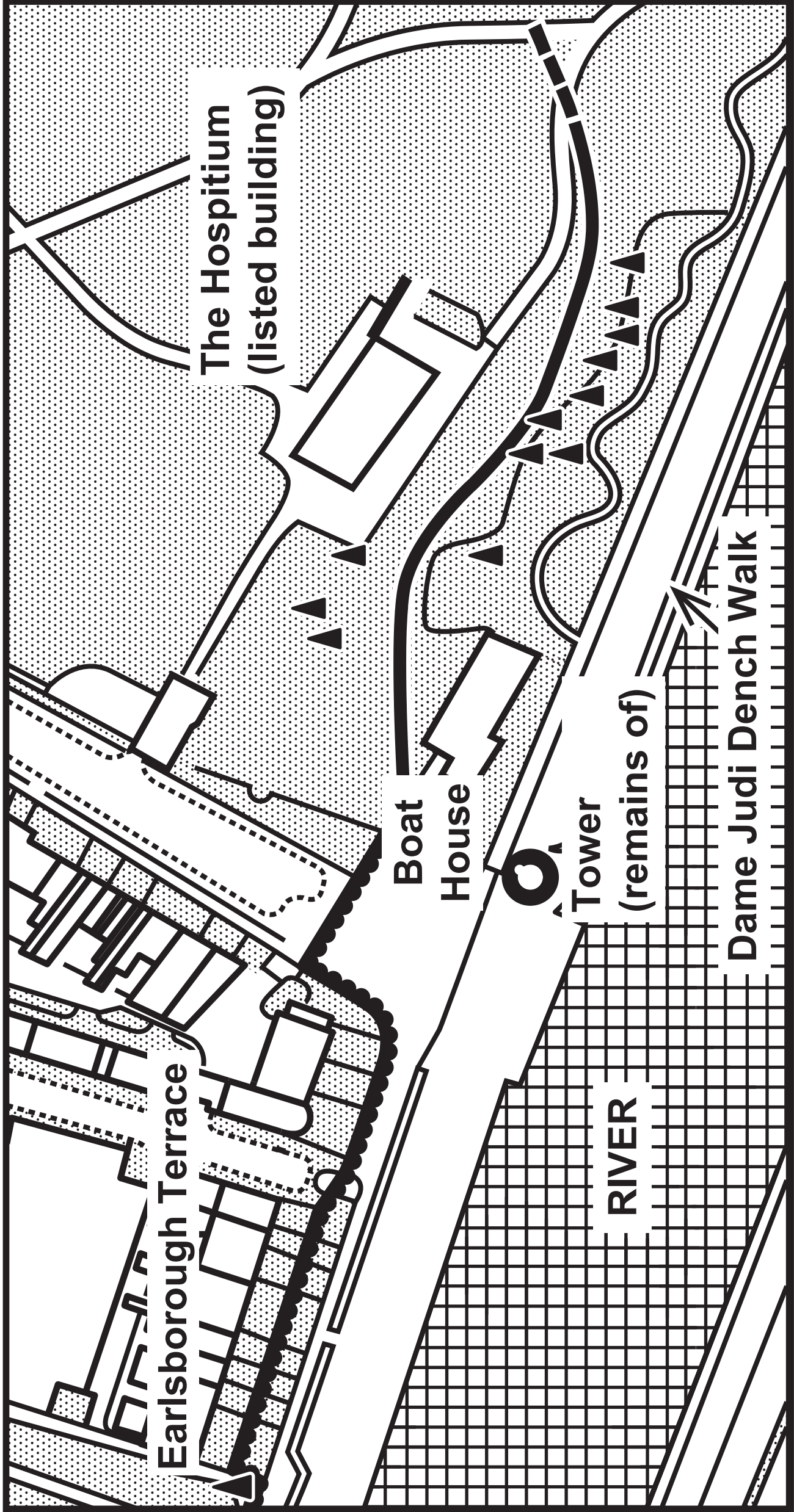


Figure 1b – Colour

Storm hydrograph

Key



Rainfall (mm)



Discharge (cumecs)

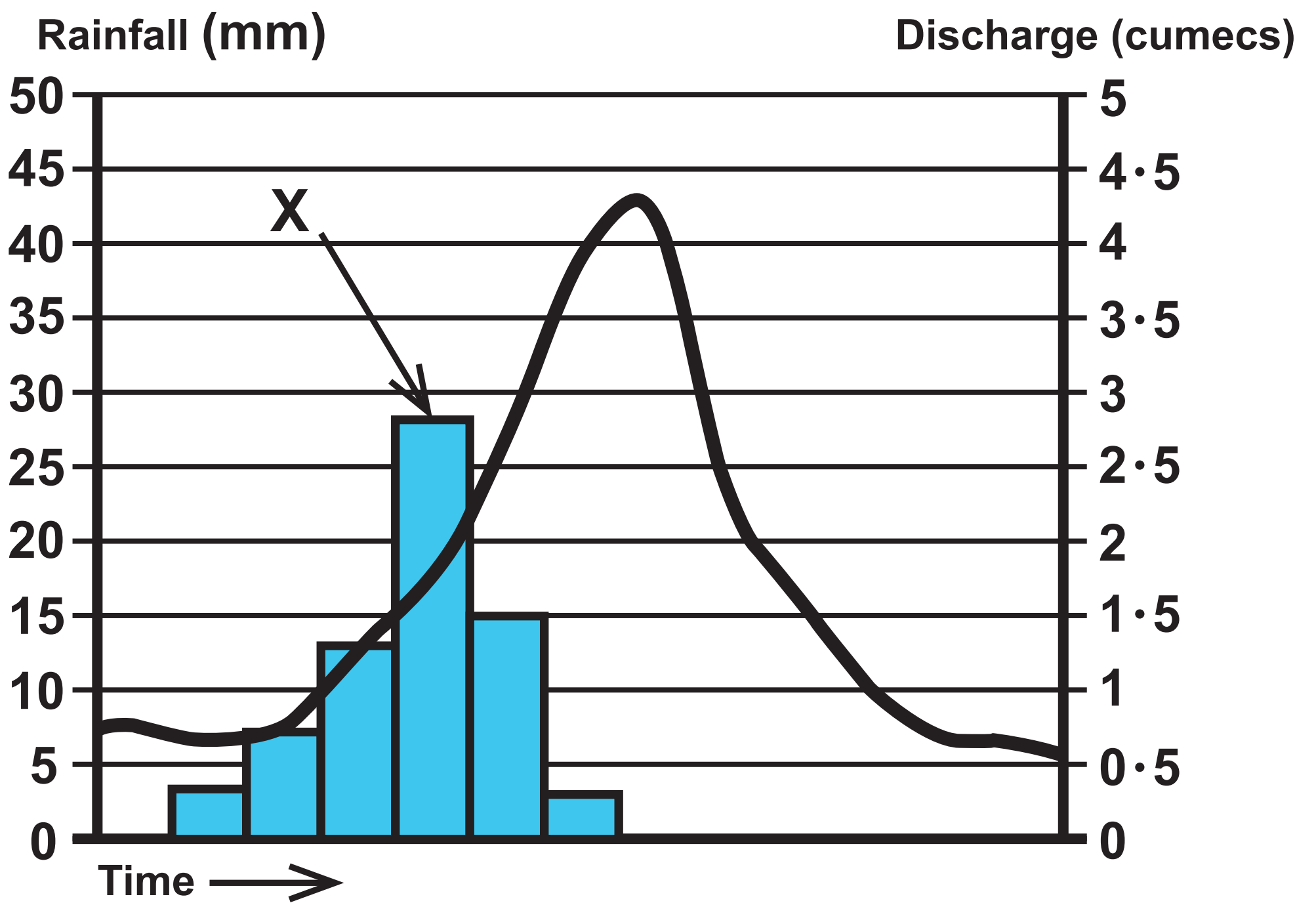


Figure 1b – Black and White

Storm hydrograph

Key



Rainfall (mm)



Discharge (cumecs)

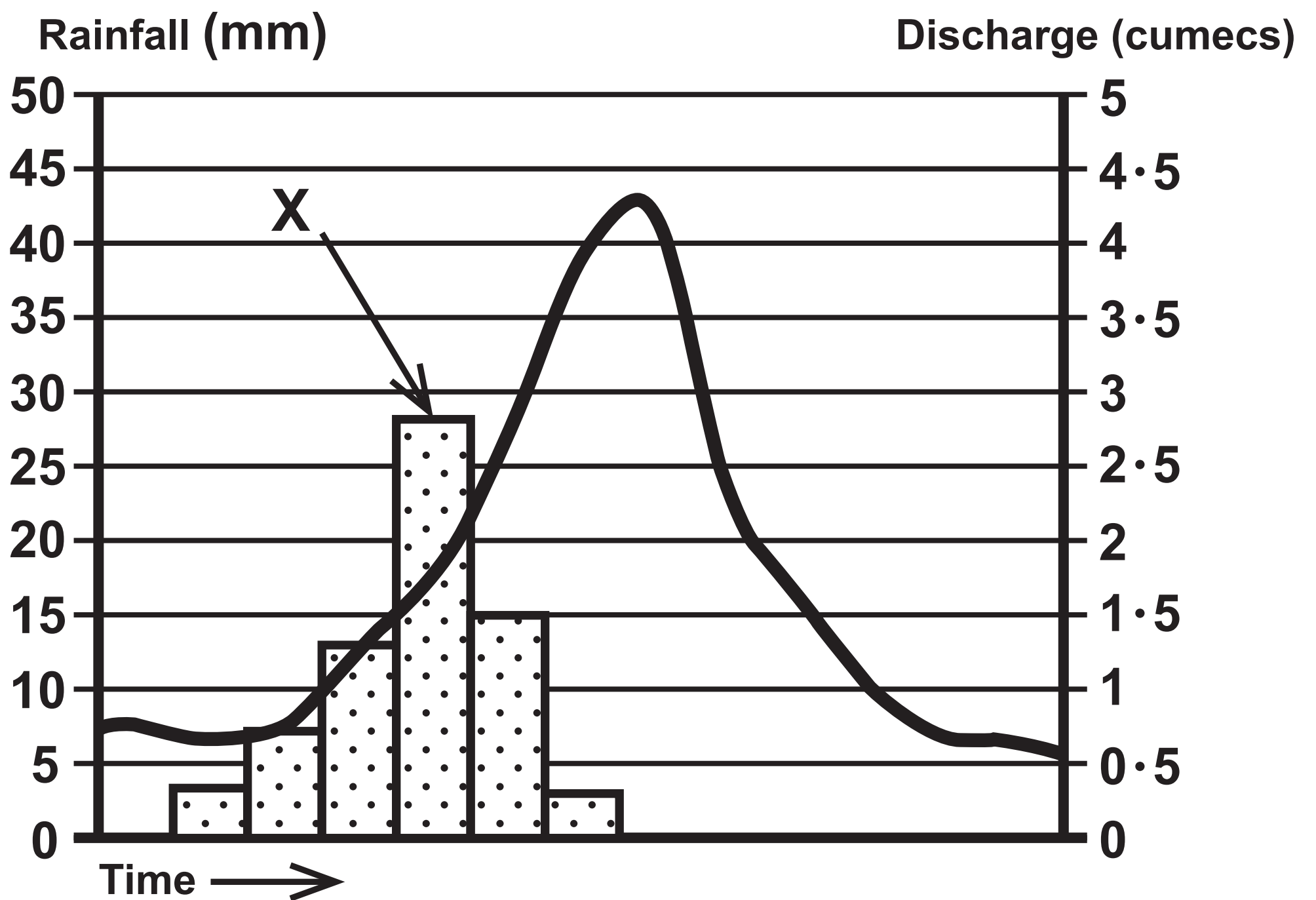


Figure 1c – Information

Information about the Grand Renaissance Dam, Ethiopia

Grand Renaissance Dam, Ethiopia

- Estimated cost **US\$5 billion**.
- Africa's largest hydroelectric power project.
- Creates reservoirs with **74 billion cubic metres** of water.
- Concerns from Egypt that it will limit water supplies to the country.
- **95%** of water consumed in Egypt is from the Nile.
- Egypt wants an agreement with Ethiopia to add water to the Nile from reservoirs linked to the dam, especially if there is a drought.

Figure 1c – Diagram
Information about the Grand Renaissance Dam,
Ethiopia

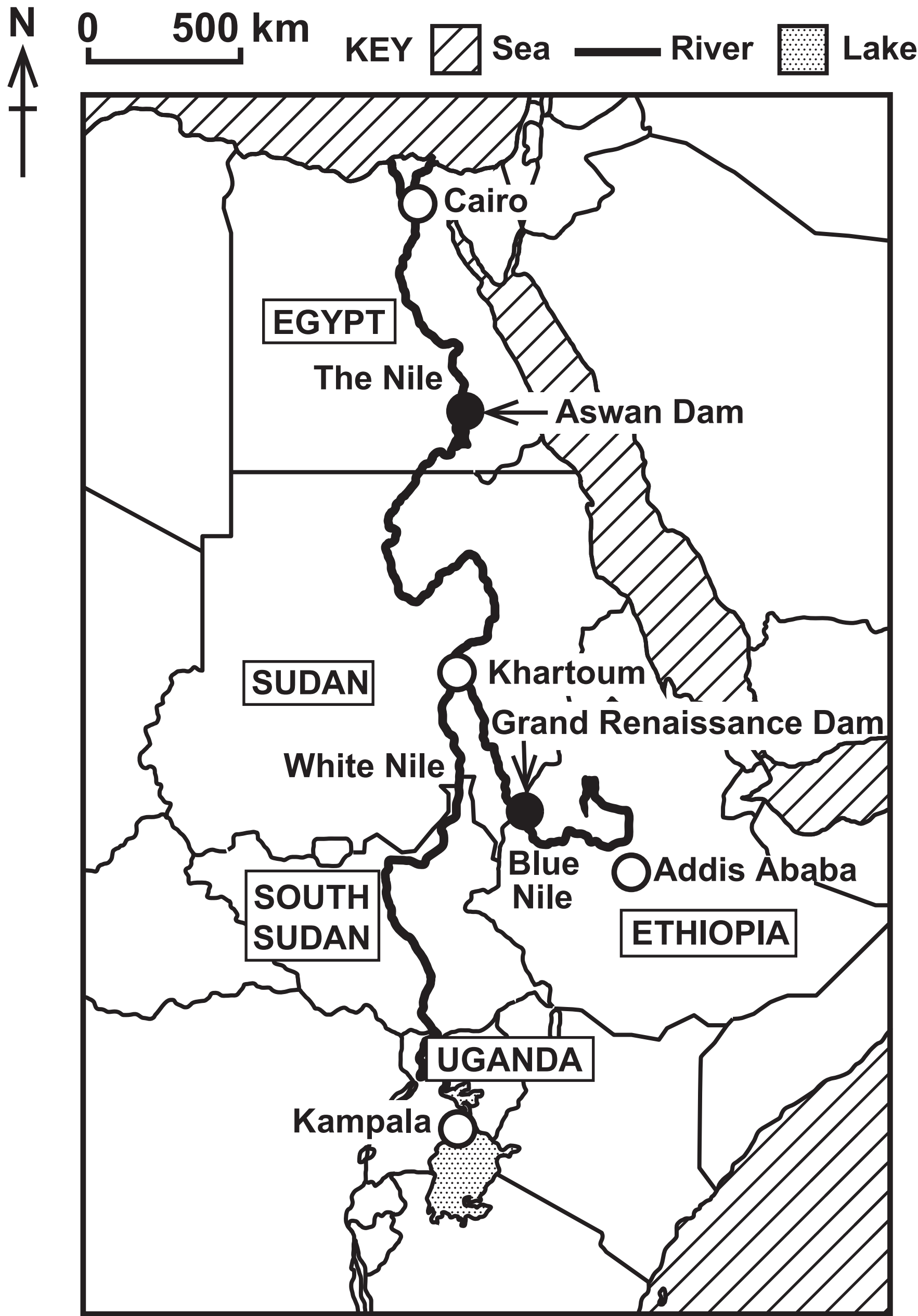


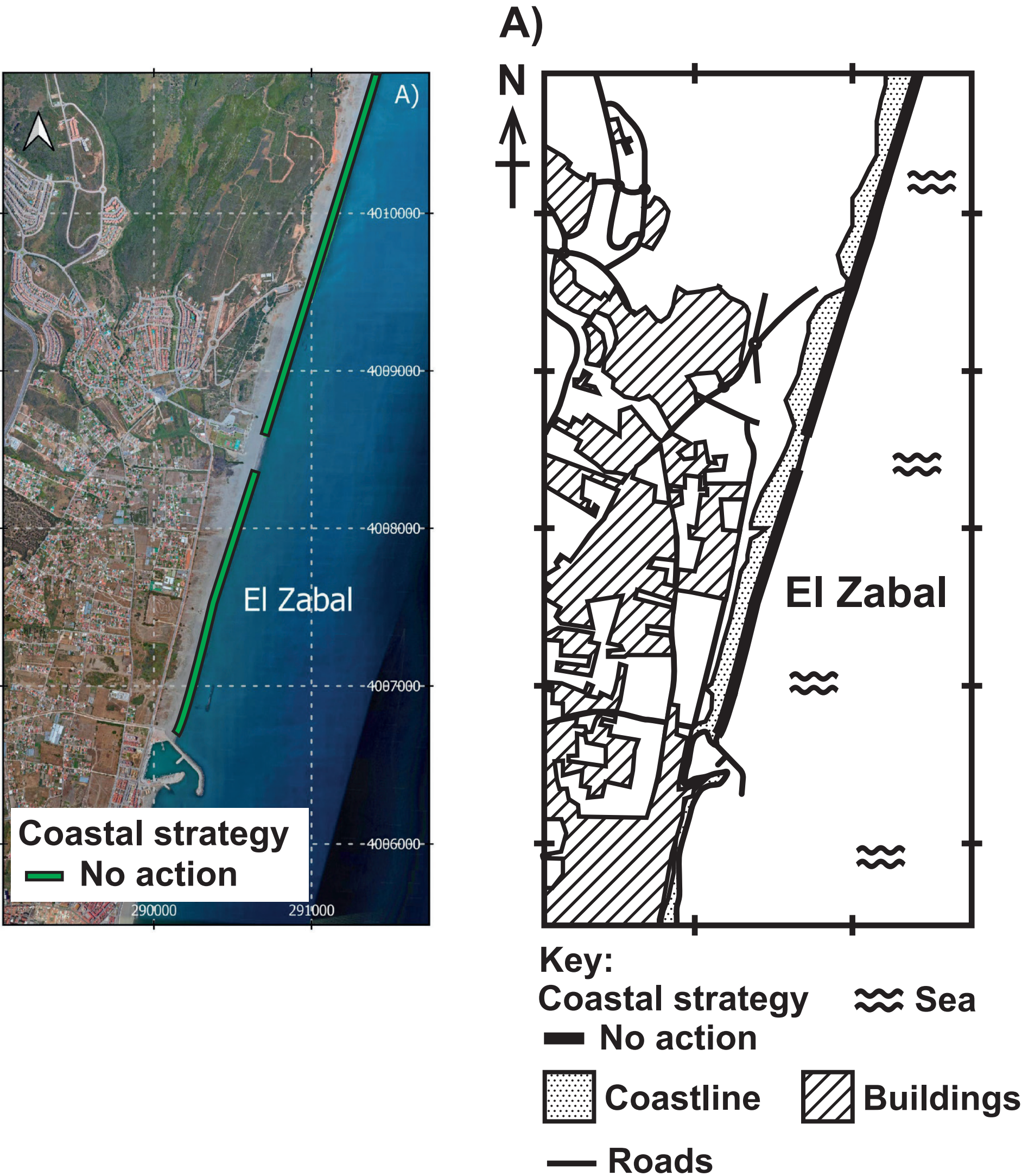
Figure 2a – Information

Coastal management strategies for one coastline in South West Spain

Location	Coastal management strategy
A) El Zabal: Industrial town	No action: Allow the coast to retreat
B) Puerto Banus: Town popular with tourists	Adaptation – managed retreat: Changing location of buildings Relocation of residents
C) Caleta de Vélez: Fishing town	Protection: Gabions Sea wall

Figure 2a (Part A)

Coastal management strategies for one coastline
in South West Spain



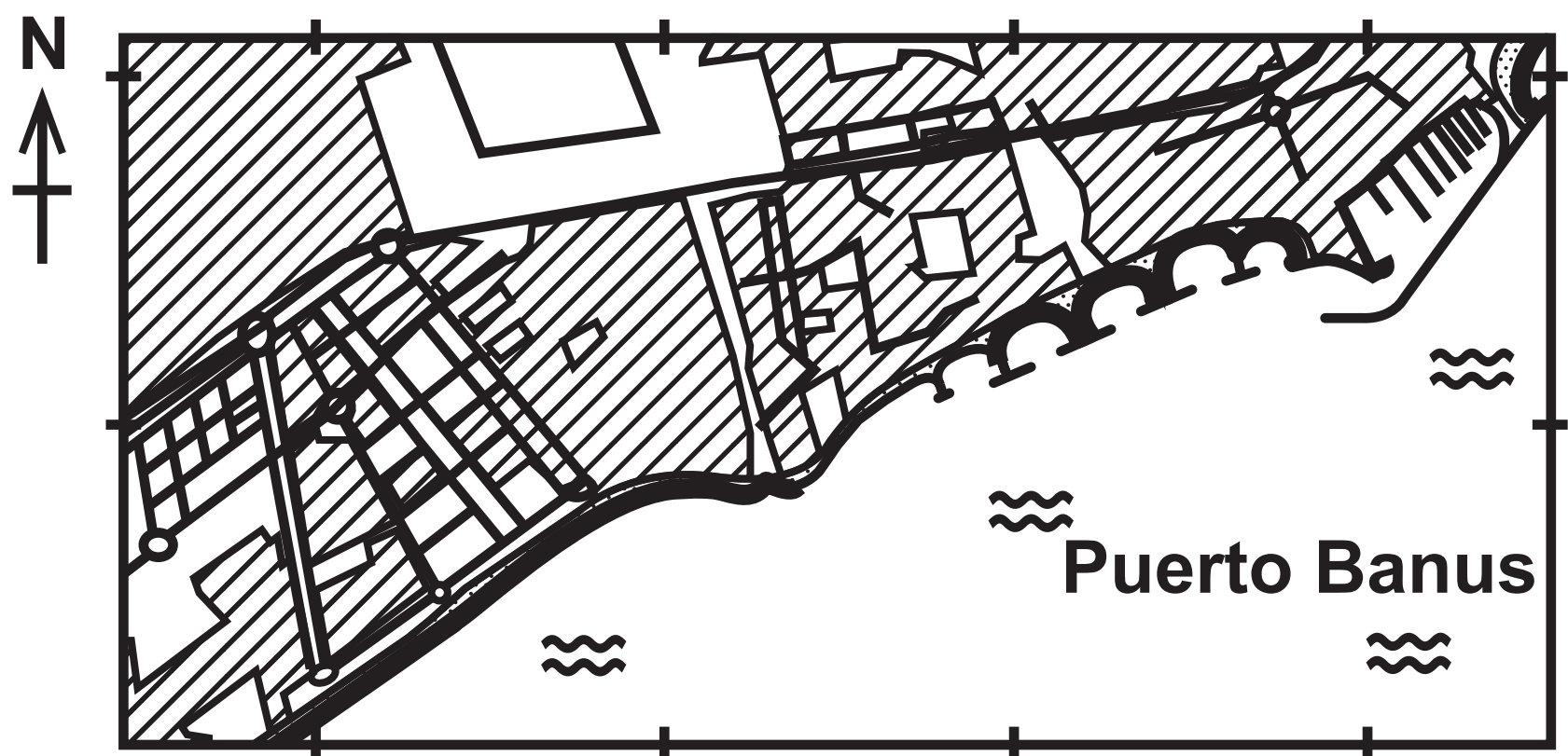
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Figure 2a (Part B)

Coastal management strategies for one coastline in South West Spain



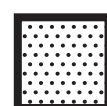
B)



Key:

Coastal strategy

Sea



Coastline



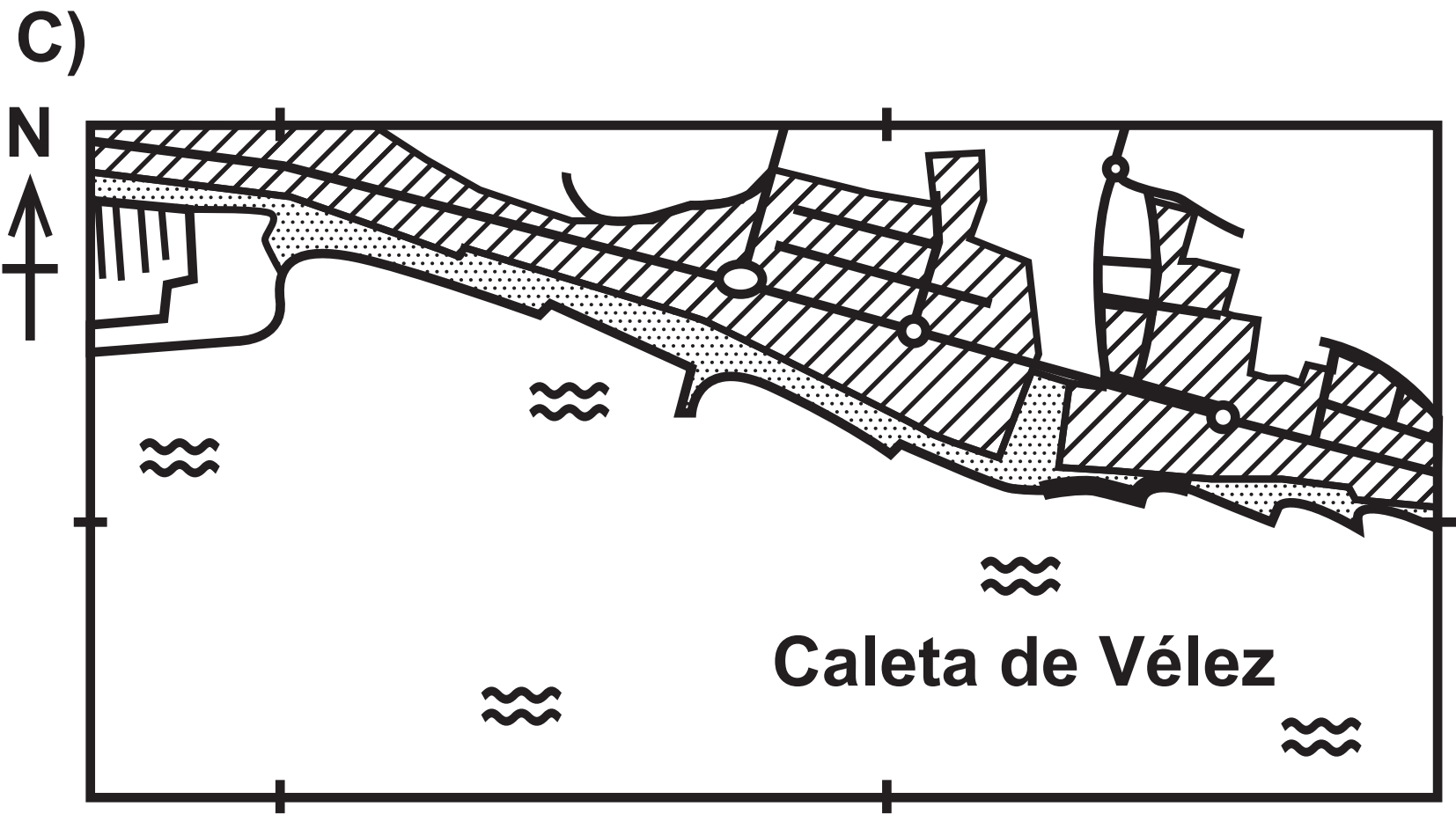
Buildings

adaptation

Roads

Figure 2a (Part C)

Coastal management strategies for one coastline
in South West Spain



Key:

- Coastal strategy ~~~~ Sea [dotted] Coastline [hatched] Buildings
— protection
— Roads

Figure 2b – Colour

Diagram of a wave

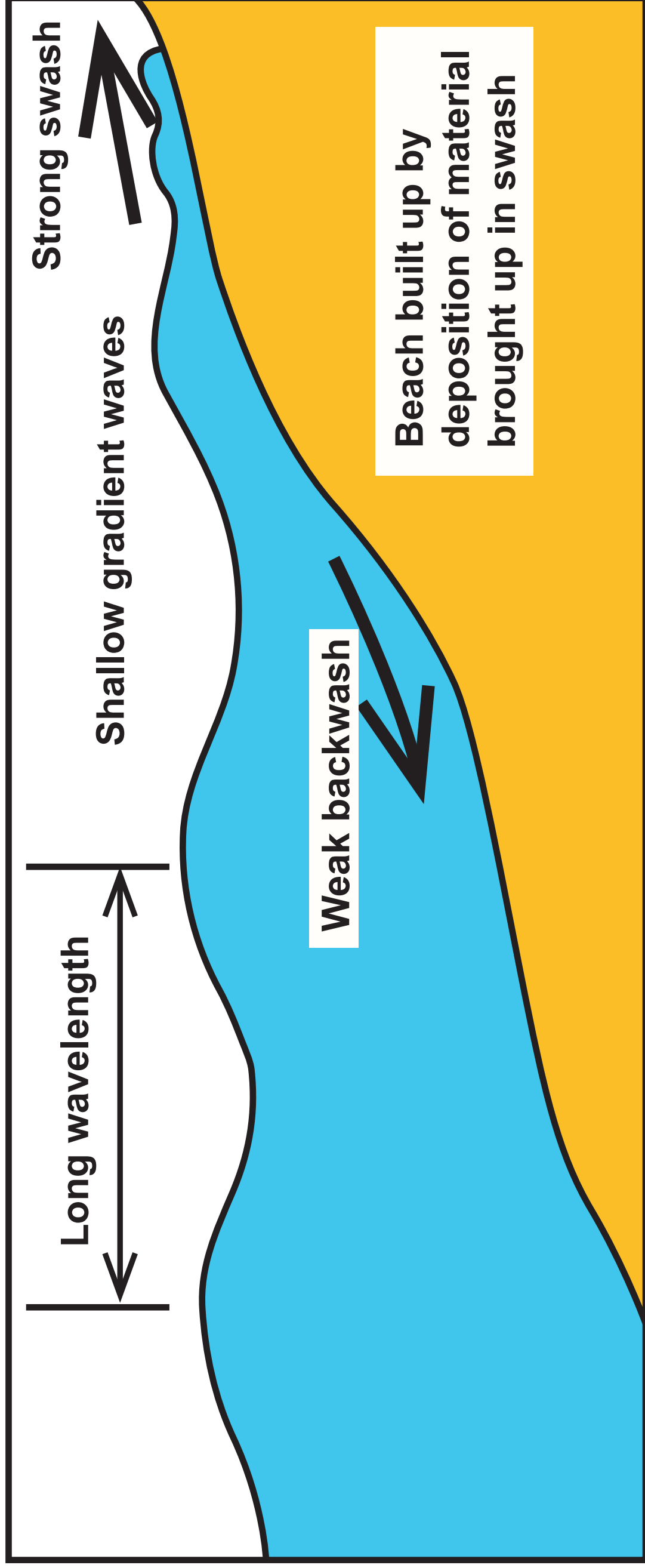


Figure 2b – Black and White

Diagram of a wave

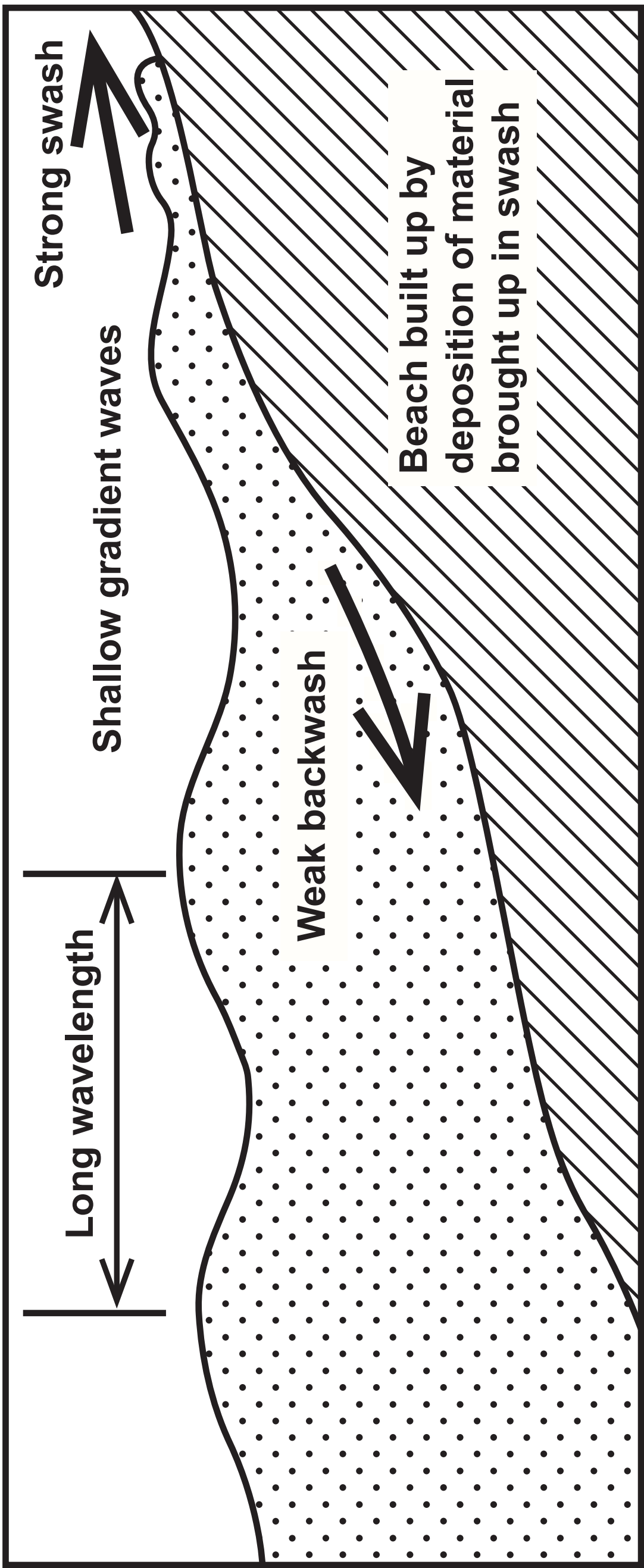


Figure 2c – Information

Information on threats to a coral reef ecosystem

1	Failed sewage systems.
2	Some chemicals from sunscreens.
3	Building on coastal areas leads to sediments reaching the water.
4	Stormwater runoff leading to chemicals and sediments reaching the water.
5	Deforestation increasing sediments reaching the water.
6	Oil and chemical spills causing water pollution.
7	Road construction causing air and water pollution.
8	Agriculture causing chemicals to leak into the soil and reach the water.

Figure 2c – Colour – Side View

Information on threats to a coral reef ecosystem

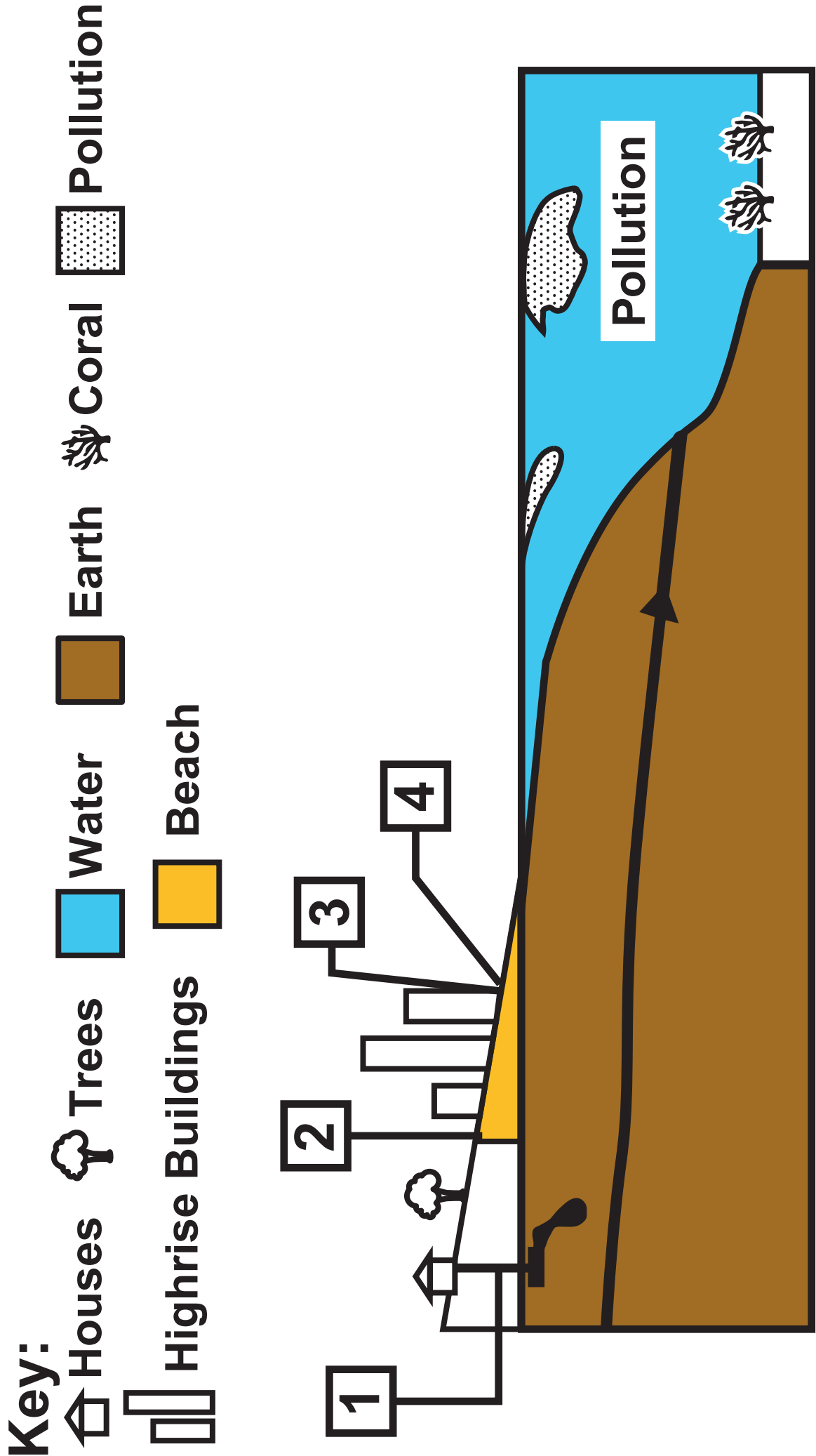


Figure 2c – Black and White and White – Side View

Information on threats to a coral reef ecosystem

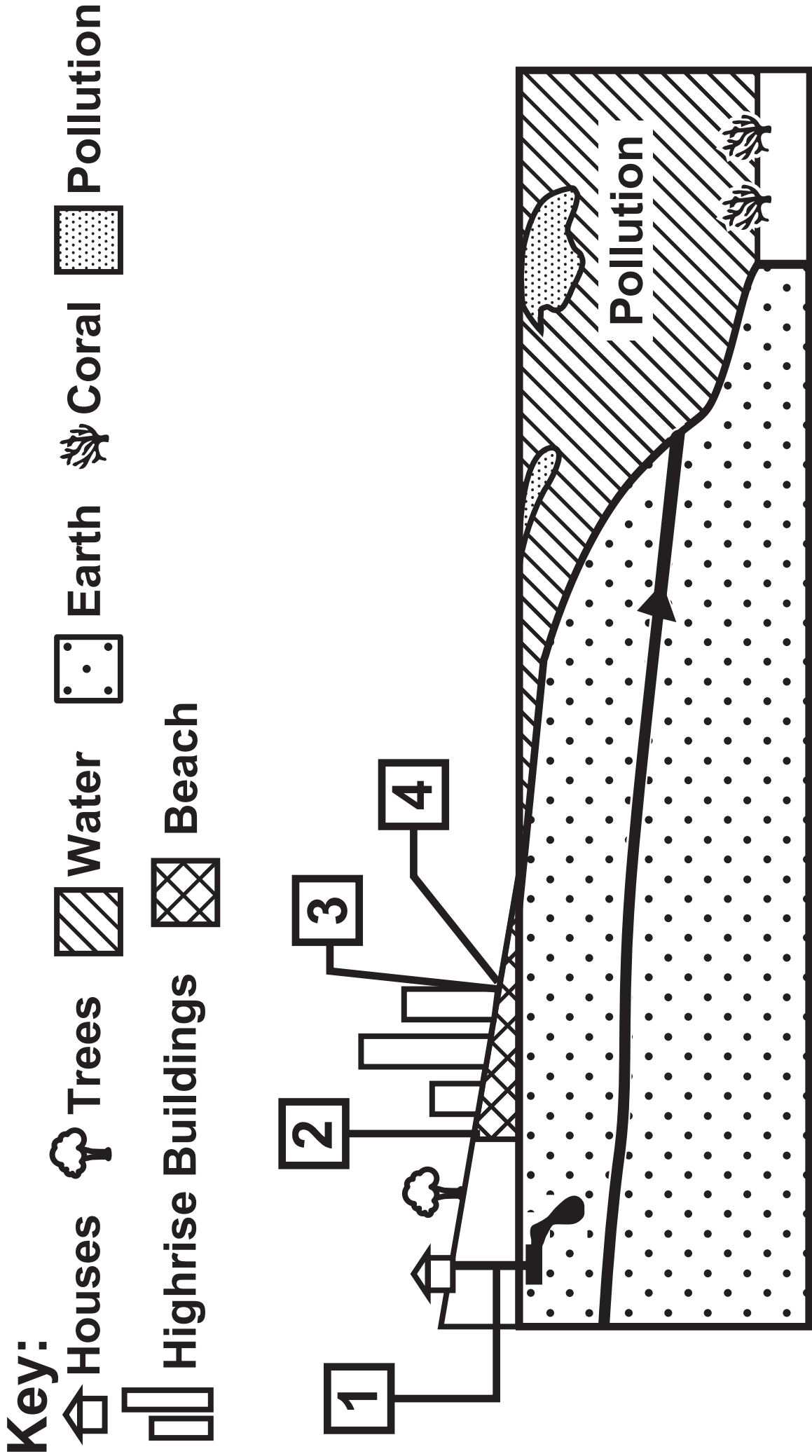


Figure 2c – Colour – Top View

Information on threats to a coral reef ecosystem

Key:

- | | | | | | |
|---|--|---|--|--|---|
|  Houses |  Trees |  Water |  Pollution |  Highrise Buildings |  Farm Land |
|  Deforestation |  Farm Buildings |  Factories |  Farm Buildings |  Beach | |



Figure 2c – Black and White – Top View

Information on threats to a coral reef ecosystem

Key:

- | | | | | | | | | | | | |
|---|---------------|---|----------------|---|-----------|---|-----------|---|--------------------|---|-----------|
|  | Houses |  | Trees |  | Water |  | Pollution |  | Highrise Buildings |  | Farm Land |
|  | Deforestation |  | Farm Buildings |  | Factories |  | Beach | | | | |



Figure 3a – Information

Information about Mount Etna's eruptions and settlement distribution

- **Mt Etna is Europe's most active volcano with 200 eruptions since 1500 BCE**
- **Significant eruptions in 2002–03, 2007, 2015, 2017, 2019, 2020–21**

Figure 3a – Diagram

Information about Mount Etna’s eruptions and settlement distribution

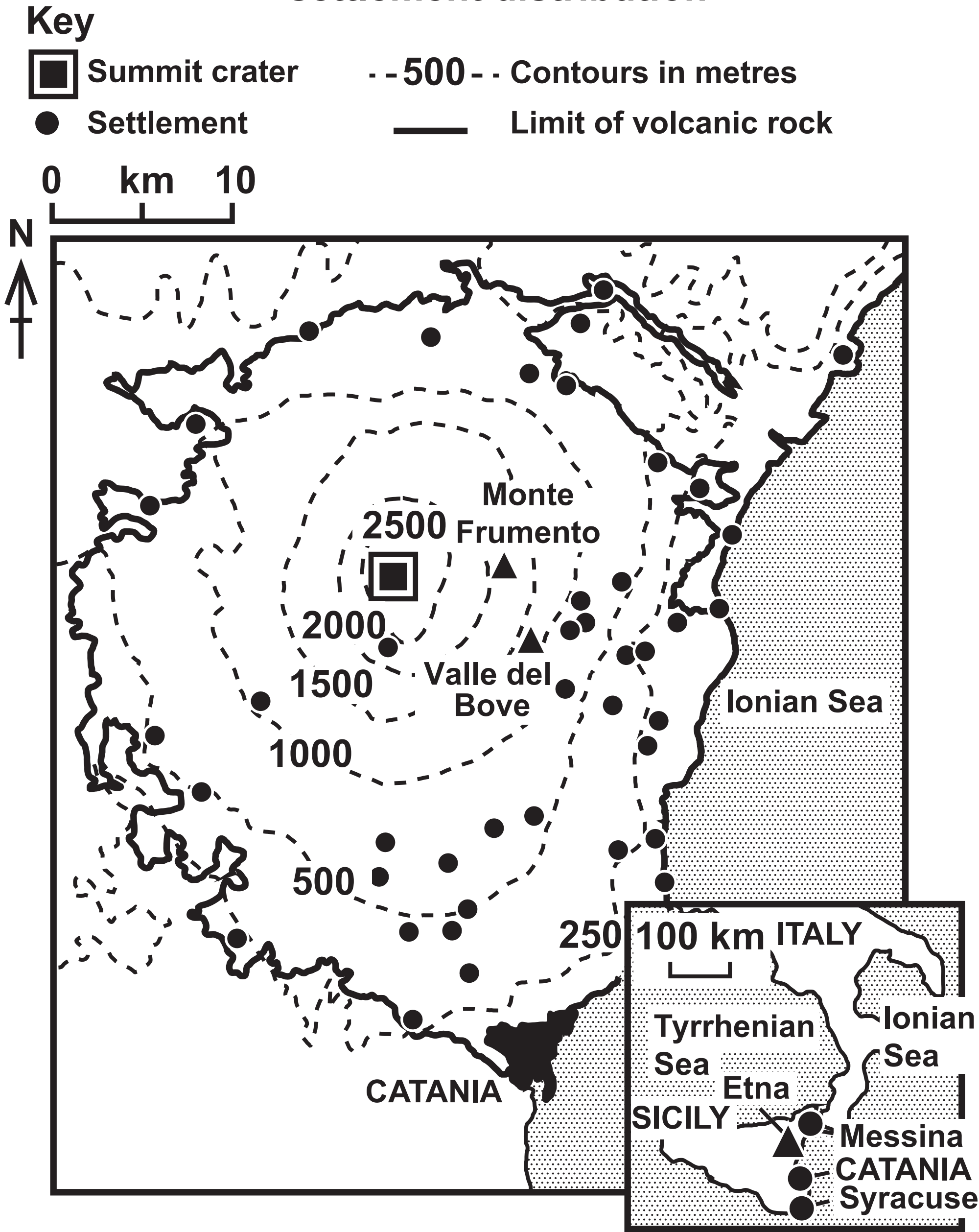
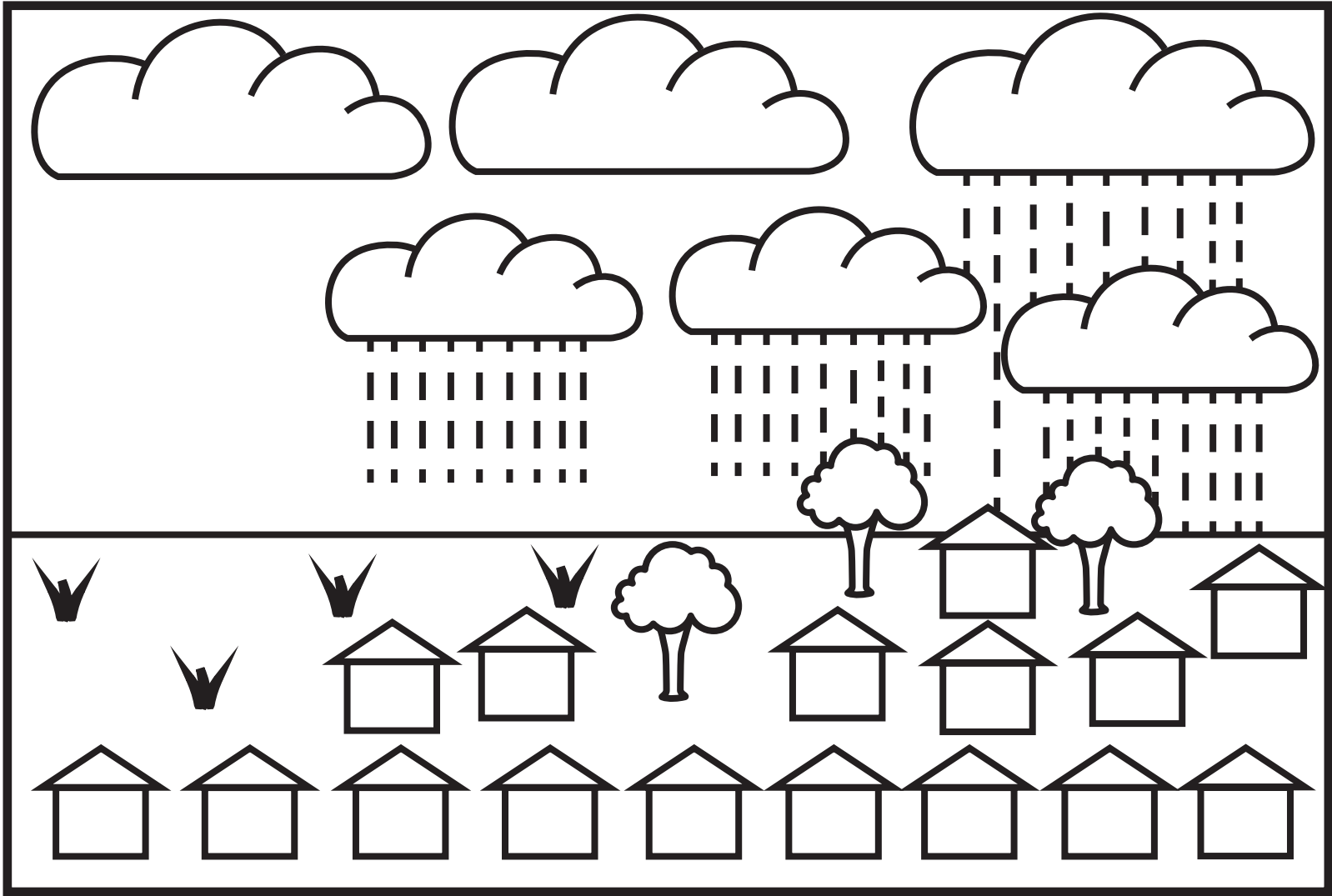


Figure 3b
Tropical cyclone approaching Bangalore, India



Key:

 Houses  Trees  Vegetation  Clouds

 Rain Clouds

Figure 3c – Information

Information on predicted tropical cyclones and preparation measures

The zones indicate where there is a **10%** probability of a storm of this intensity striking in the next **10** years.

Hong Kong, China	Population: 7·50 million <ul style="list-style-type: none"> • Observatory issuing advice and warnings. • Public education programme about cyclone preparedness.
Manila, Philippines	Population: 1·84 million <ul style="list-style-type: none"> • Tropical cyclone early warning system. • Community evacuation routes.
Darwin, Australia	Population: 0·13 million <ul style="list-style-type: none"> • Building standards to ensure can withstand high winds.

Figure 3c – Colour (Part 1)

Information on predicted tropical cyclones and preparation measures

Key: Tropical Cyclone

Intensity Saffir–Simpson Scale

One: 118–153 km/h Two: 154–177 km/h Three: 178–209 km/h

Four: 210–249 km/h Five: 250 + km/h

Storm Season: September to May

Peak Month: January



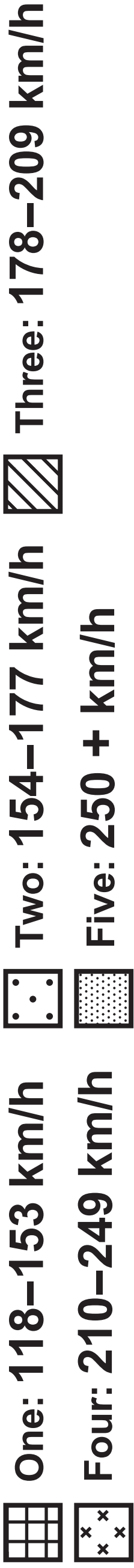
Storm Season: June
to December
Peak Month: August

Figure 3c – Black and White (Part 1)

Information on predicted tropical cyclones and preparation measures

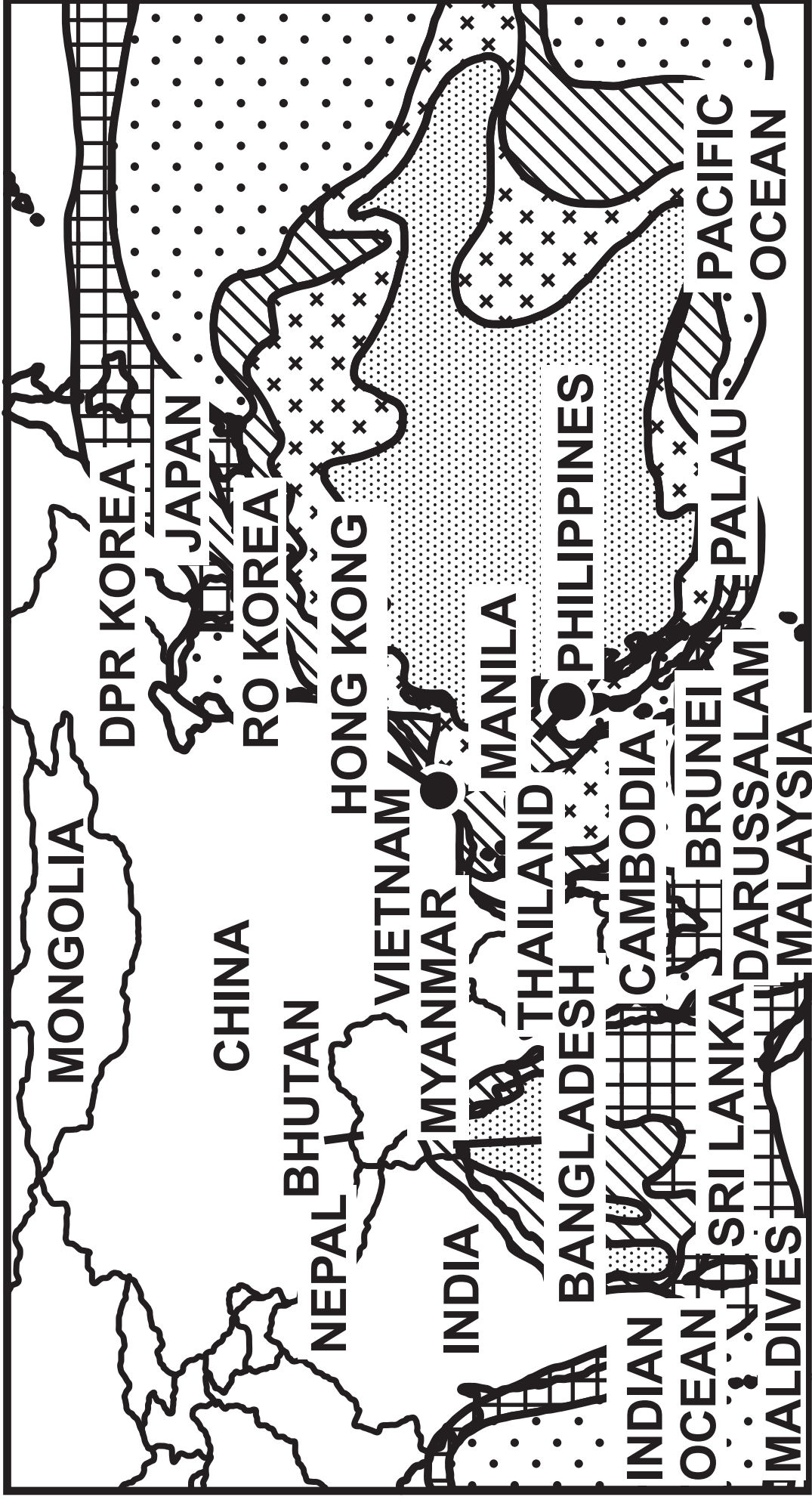
Key: Tropical Cyclone

Intensity Saffir–Simpson Scale



Storm Season: September to May

Peak Month: January



Storm Season: June
to December
Peak Month: August

Figure 3c – Colour (Part 2)

Information on predicted tropical cyclones and preparation measures

Key: Tropical Cyclone

Intensity Saffir–Simpson Scale

One: 118–153 km/h Two: 154–177 km/h Three: 178–209 km/h

Four: 210–249 km/h Five: 250 + km/h

Storm Season: September to May

Peak Month: January

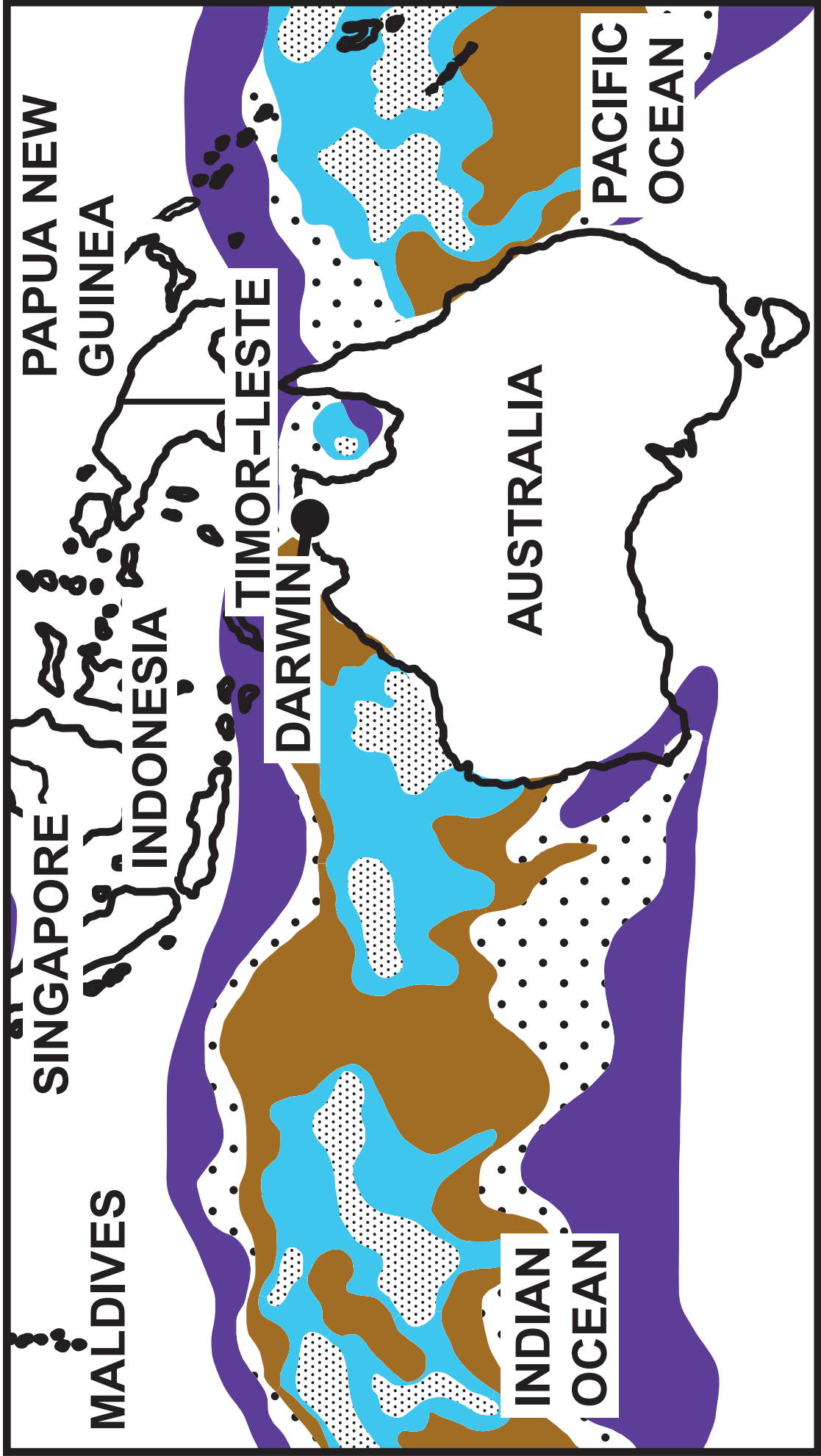


Figure 3c – Black and White (Part 2)

Information on predicted tropical cyclones and preparation measures

Key: Tropical Cyclone

Intensity Saffir–Simpson Scale



One: 118–153 km/h



Two: 154–177 km/h



Three: 178–209 km/h



Four: 210–249 km/h



Five: 250 + km/h

Storm Season: September to May

Peak Month: January

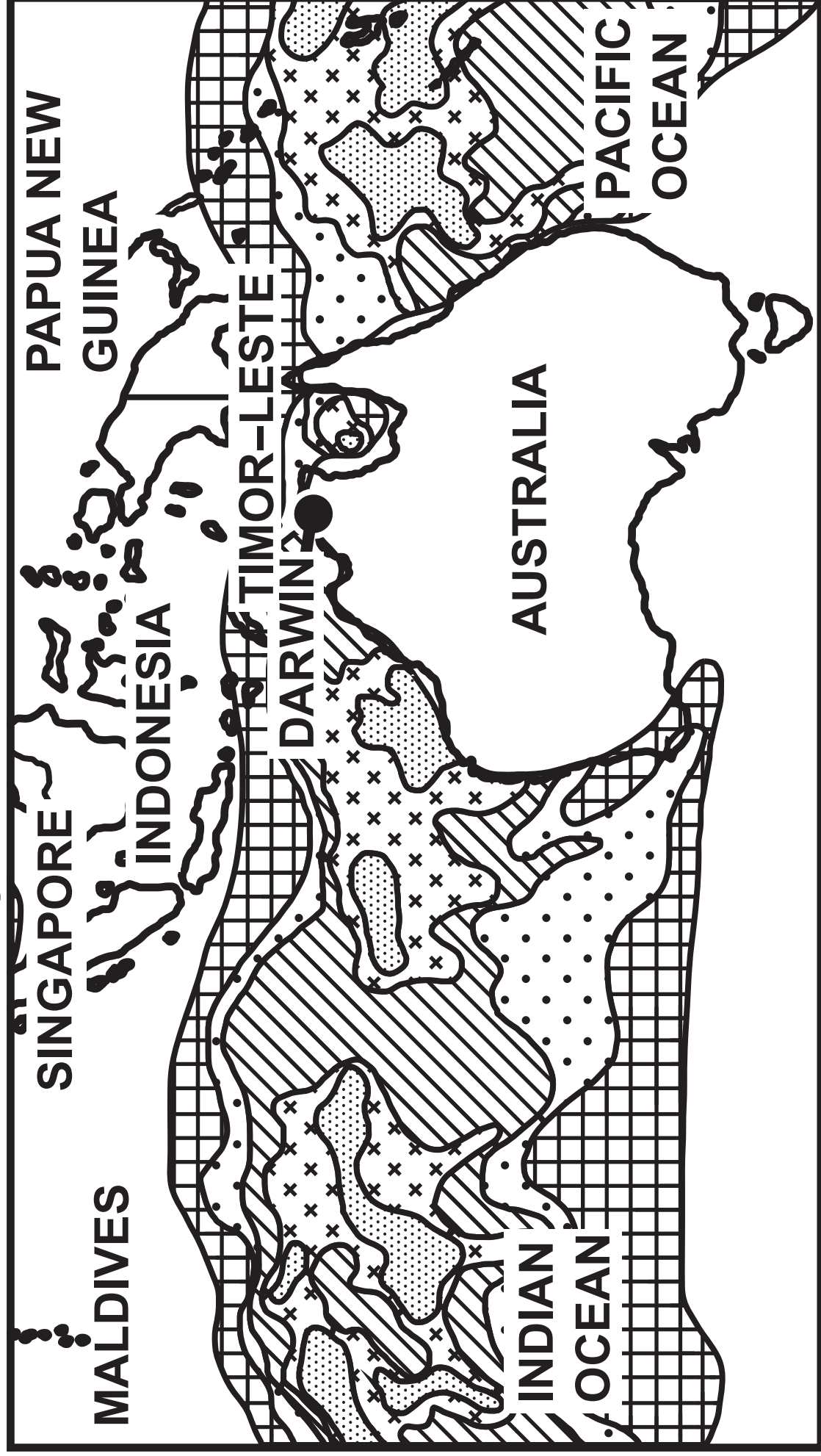


Figure 4a

Selected data/information used by the students

Data/information used by the students:

- **Environment Agency flood risk map**
- **Newspaper articles**
- **Local historical map**
- **Field sketches**
- **Measurements of: river velocity, river depth and sediment size**

Figure 4b

Data collected on river velocity (m/s)

	Site 1	Site 2	Site 3	Site 4
Measurement 1	0.2	1.2	0.7	0.5
Measurement 2	0.8	1.0	0.6	0.6
Measurement 3	1.2	1.2	0.6	0.5
Measurement 4	1.3	1.3	0.6	0.4
Mean velocity	0.9	?	0.6	0.5
Range in velocity	1.1	0.3	0.1	0.2

Figure 4c

Data collected on river channel depth and width

Depth (metres)	Width (metres)
0	0
−0·6	0·5
−0·8	1
−1	1·5
−1·2	2
−1·4	2·5
−0·8	3
−1·2	3·5
−1	4
−0·8	4·5
0	5

Figure 5a

Selected types of data/information used by the students

Data/information used by the students:

- **Local shoreline management plan**
- **Newspaper articles**
- **Local historical map**
- **Field sketches**
- **Measurements of: sediment size, beach gradient and beach height**

Figure 5b

Data collected on sediment characteristics (mm)

	Site 1	Site 2	Site 3	Site 4
Pebble 1	20	25	22	52
Pebble 2	60	20	15	50
Pebble 3	82	22	17	39
Pebble 4	26	18	12	56
Mean size	47	?	17	49
Range in size	62	7	10	13

Figure 5c

Data collected on height and distance from shoreline

Height (metres)	Distance from shoreline (metres)
0	0
0·6	10
0·8	20
1·2	30
1·4	40
1·6	50
2	60
2·1	80
2·6	100
2·9	120

Figure 6a

Selected types of data/information used by the students

Data/information used by the students:

- **Local weather map**
- **Newspaper articles**
- **Local weather diary from last year**
- **Field sketches**
- **Measurements of: rainfall, humidity and wind speed**

Figure 6b

Data collected on wind speed (mph)

	Site 1	Site 2	Site 3	Site 4
Reading 1	20	8	12	16
Reading 2	21	6	12	16
Reading 3	20	7	11	16
Reading 4	12	8	10	17
Mean wind speed	18	?	11	16
Range in wind speed	8	2	2	1

Figure 6c

Data collected on daily temperature

Day	Temperature (°C)
1	21·2
2	20·3
3	22·0
4	22·6
5	25·0
6	18·0
7	16·0
8	17·2
9	16·0
10	17·6

Acknowledgments:

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

Figure 2a adapted from: <https://www.mdpi.com/2077-1312/8/3/154/htm>

Figure 2c adapted from: <https://oceanservice.noaa.gov/facts/coral-pollution.html>

Figure 3b adapted from: © Manish Bansal