



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
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GEOGRAPHY

0460/43

Paper 4 Alternative to Coursework

October/November 2010

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO NOT WRITE ON ANY BARCODES.

Answer **all** questions.
The Insert contains Photographs A and B, and Figs 3 and 5 for Question 1.
The Insert is **not** required by the Examiner.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's Use	
Q1	
Q2	
Total	

This document consists of **15** printed pages, **1** blank page, and **1** Insert.



- 1 A group of students went on a field visit to some coastal sand dunes. Having studied how sand dunes were formed in class, the students wanted to find out more about their shape and how they might be affected by people. Coastal sand dunes are popular places for people to visit but this may affect the natural environment. An area of coastal sand dunes is shown in Photograph A (Insert).

The students agreed on two hypotheses.

Hypothesis 1: *The profile of the sand dunes would match a textbook example they had used in class.*

Hypothesis 2: *Human activity will vary across the profile and will affect the vegetation cover of the sand dunes.*

- (a) Fig. 1 is a sketch of the area shown in Photograph A.



Fig. 1

On the sketch, label with an arrow:

- an area of bare sand
- an area of marram grass

[2]

- (b) (i) In order to investigate both hypotheses, the students decided to work a transect from the sea inland. To make their transect line as accurate as possible, the students put a rope on the ground starting at the sea and working inland.

On Fig. 2 below choose the angle at which they should have put the rope. Circle your answer below.

A B C D [1]

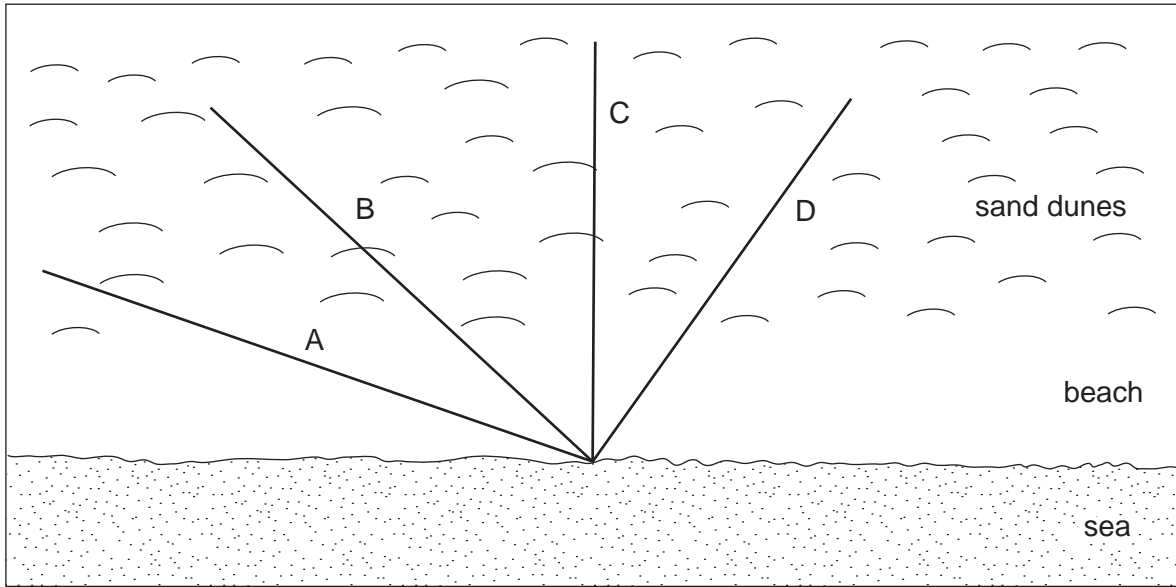


Fig. 2

- (ii) The students used a systematic sampling method of selecting measuring points along the transect. Describe how they would use this sampling method.

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5

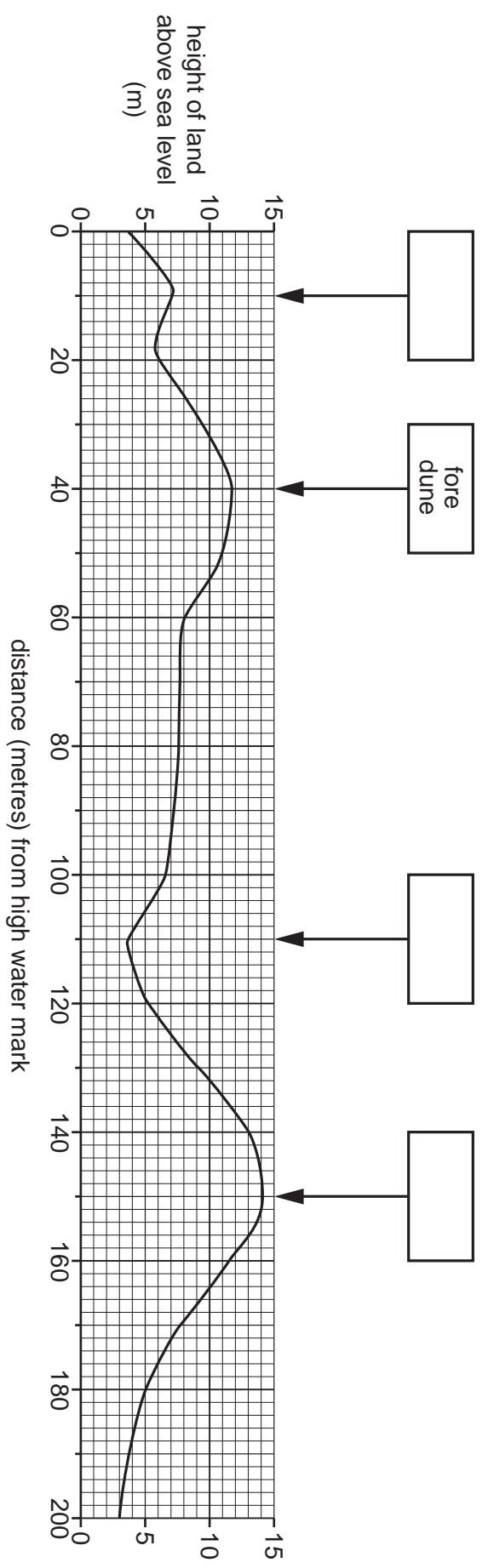


Fig. 4

- (d) To investigate **Hypothesis 2: Human activity will vary across the profile and width of the sand dunes**, the students measured the amount of vegetation cover at each sampling point on the transect. They also made a note of any evidence of human activity at each point.

- (i) To measure the amount of vegetation cover they used a quadrat, shown in Photograph B (Insert). Describe how the students would do this investigation.

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- (ii) The students' results are shown in Table 1 below.

Table 1

Site along transect	Distance from high water mark of sea (m)	Amount of vegetation cover (%)	Evidence of Human activity
1	0	50	Footprints
2	10	25	Litter, footprints
3	20	40	Litter bin, footprints
4	30	80	None
5	40	55	Litter
6	50	85	None
7	60	50	Footpath, trampling
8	70	100	None
9	80	100	None
10	90	60	Litter, soil erosion
11	100	0	Damage from fire
12	110	0	Damage from fire
13	120	30	Bench
14	130	50	Footpath
15	140	25	Look out point
16	150	90	None
17	160	100	None
18	170	10	Cycle path
19	180	45	Litter
20	190	0	Picnic site
21	200	20	Picnic site

The students drew a bar graph of the amount of vegetation cover at each sampling site along the transect. This is shown in Fig. 6, below.
 Use the data from Table 1 to draw bars at sampling points 15 and 16 on Fig. 6.

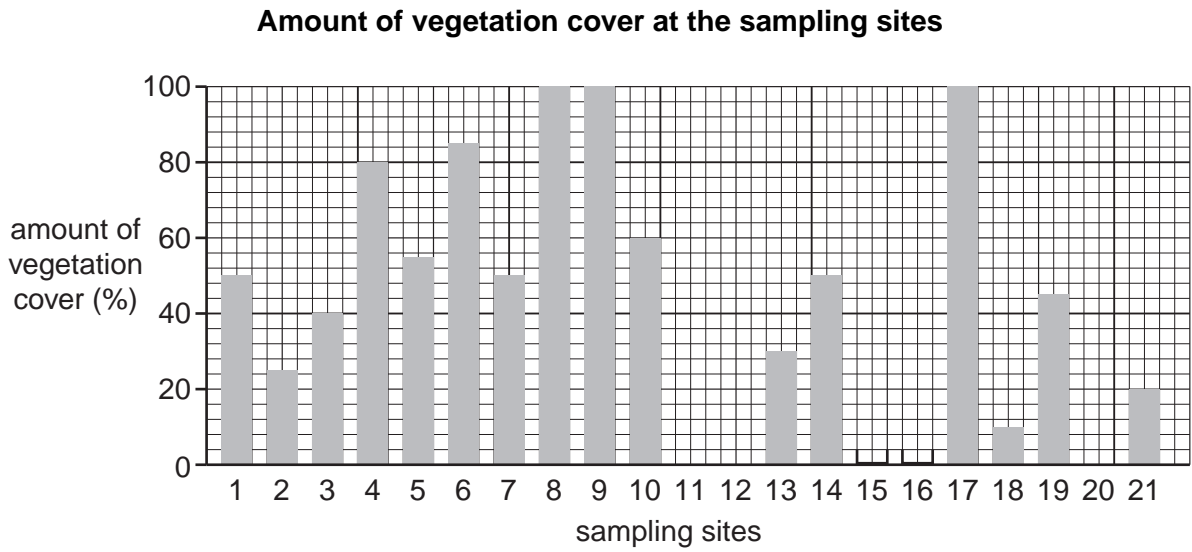


Fig. 6

(iii) To what extent is **Hypothesis 2: Human activity will vary across the profile and will affect the vegetation cover of the sand dunes accurate?** Use evidence from Table 1 and Fig. 6 to support your view.

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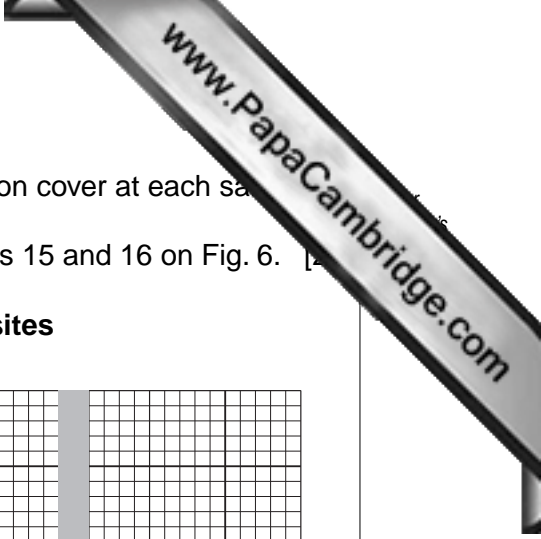
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[4]



2 A class of students wanted to investigate the Central Business District (CBD) of a local town. In particular, they wanted to decide where the boundary of the CBD occurred. They had learned in class that this is known as 'delimiting' the CBD. They had discussed with the teacher a number of fieldwork techniques that could be used to delimit the CBD.

The students agreed to test two hypotheses.

Hypothesis 1: *Different techniques may produce different results when delimiting the CBD.*

Hypothesis 2: *Measuring building height is the most accurate way to delimit the CBD.*

(a) To help them to test their hypotheses, the students decided to obtain primary and secondary data. How are these two types of data different?

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(b) The students agreed to use four different techniques to test **Hypothesis 1**.

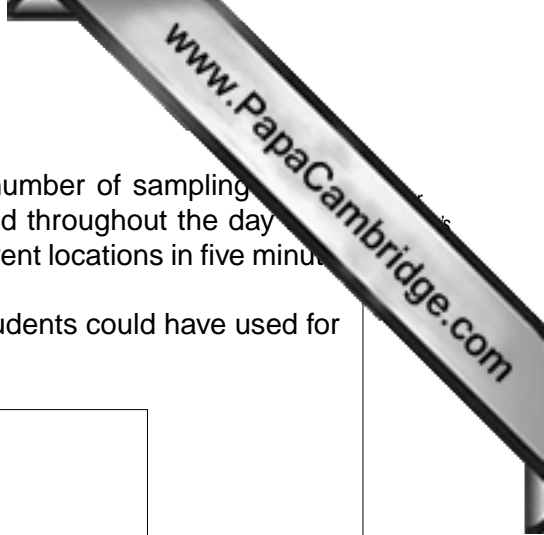
These were:

- Mapping land use
- Pedestrian counts
- Noting traffic restrictions
- A survey of building heights

(i) Their first task was to map land use onto a base map of the town. Describe how they would carry out this mapping task during fieldwork and in school.

Fieldwork:
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In school:
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..... [4]



- (ii) Their second task was to do a pedestrian count at a number of sampling points in their study area. Two students undertook this task and throughout the day counted the number of pedestrians passing them at different locations in five minute periods.
In the space below, draw a recording sheet which the students could have used for this task.

[3]

- (iii) When the students returned to school having completed their pedestrian counts, their teacher pointed out a weakness in their fieldwork, which was that they had done their counts at different times of the day. Why would this make their results unreliable?

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 [1]

- (iv) The students decided to repeat the pedestrian counts as a class the next day. Describe an appropriate method to ensure they obtained reliable results.

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 [2]

(c) The results of the pedestrian count are shown in Fig. 7 below. Some isolines have been drawn on the map to show pedestrian flow.

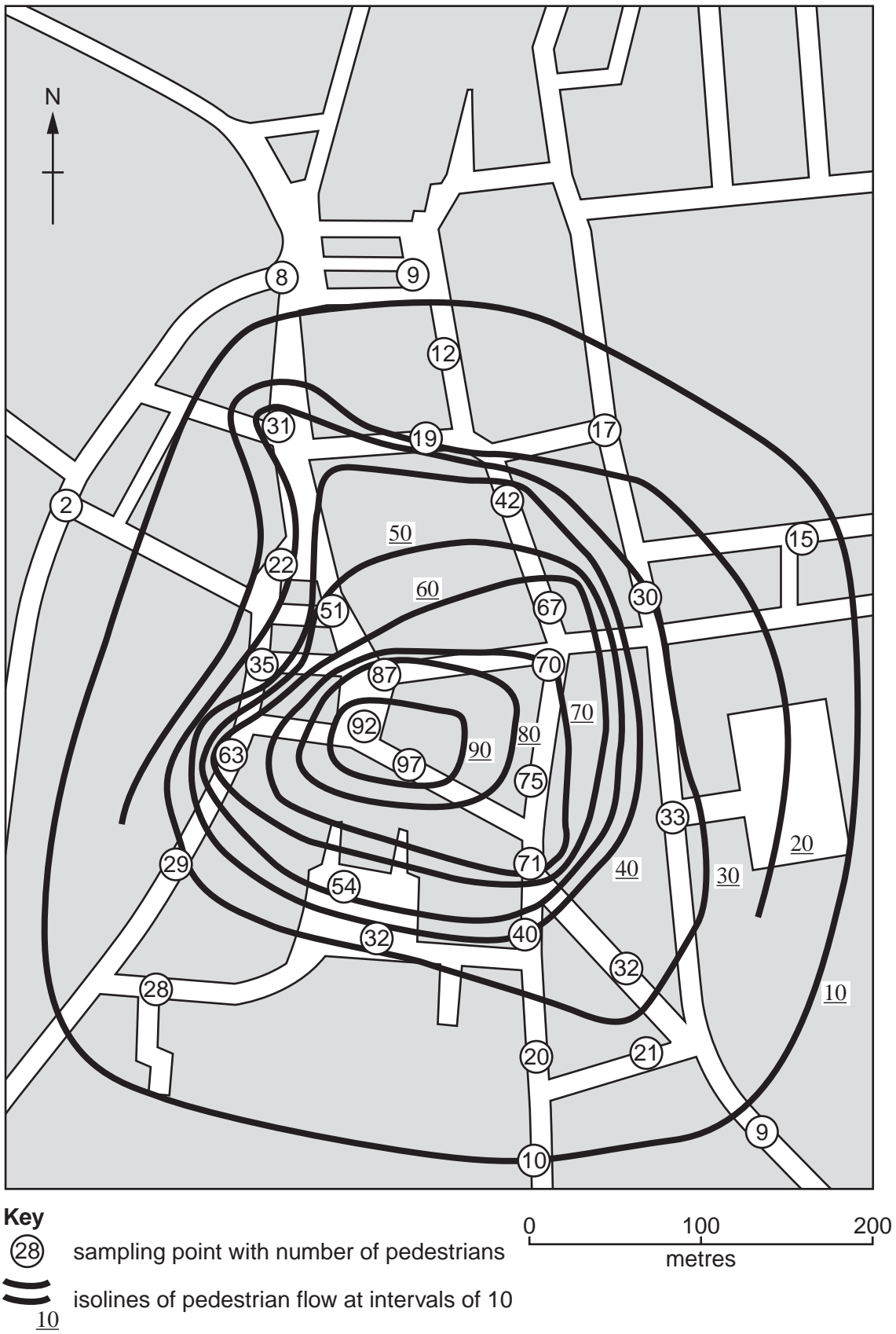
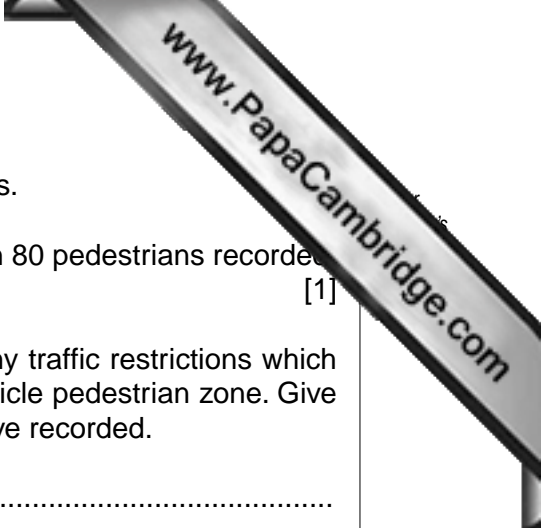


Fig. 7



- (i) On Fig. 7, complete the isoline that shows 20 pedestrians.
- (ii) On Fig. 7, shade in the area where there were more than 80 pedestrians recorded. [1]

(iii) Whilst in town, the students also marked on the map any traffic restrictions which they saw. One example of a traffic restriction is a no vehicle pedestrian zone. Give **three** other examples of traffic restrictions they could have recorded.

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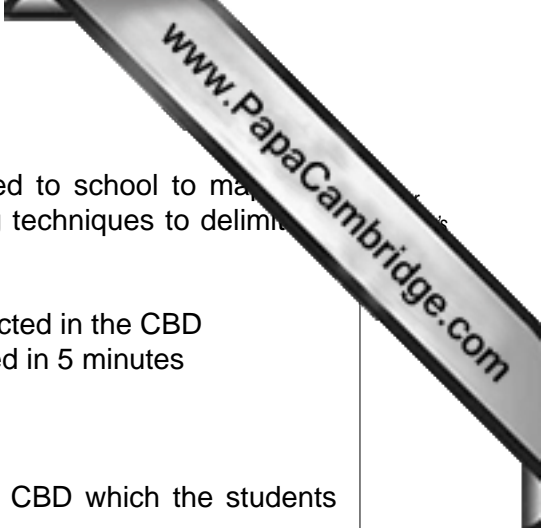
(iv) To obtain their final set of data, the students obtained a map which showed the height of buildings in the town. Suggest why the students did not map this data themselves.

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(d) Having completed their data collection the students returned to school to make their results. After a discussion, they decided to use the following techniques to delimit the area of the CBD:

- Land use map: land use types which would be expected in the CBD
- Pedestrian count: more than 40 pedestrians recorded in 5 minutes
- Height of buildings: 3 or more storeys high
- Traffic restrictions

(i) Suggest **three** land use types that are common in the CBD which the students could have used to delimit its area.

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..... [3]

(ii) For each of the above techniques, the students delimited the area of the CBD. Their decisions are shown in Fig. 8 opposite.

What conclusion can you make about **Hypothesis 1: Different techniques may produce different results when delimiting the CBD?** Use evidence from Fig. 8 to support your conclusion.

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..... [2]

(iii) The students decided to combine the results of all four techniques in order to delimit the CBD.

On Fig. 8, shade in the area which is included in the CBD area of all the following techniques: building height, land use and pedestrian flow. [1]

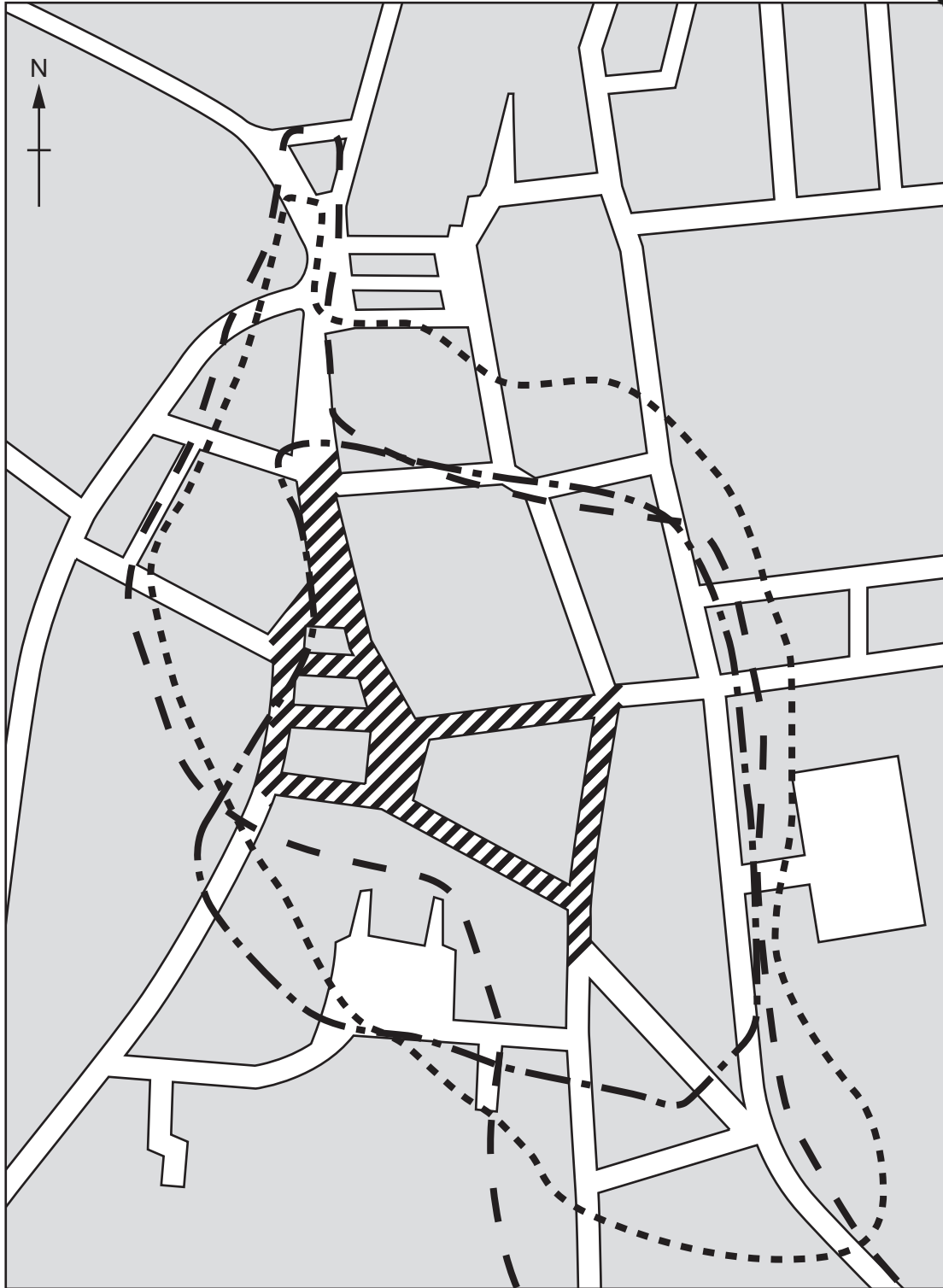
(iv) Use Fig. 8 to make a conclusion about **Hypothesis 2: Measuring building height is the most accurate way to delimit the CBD.** Explain your conclusion.

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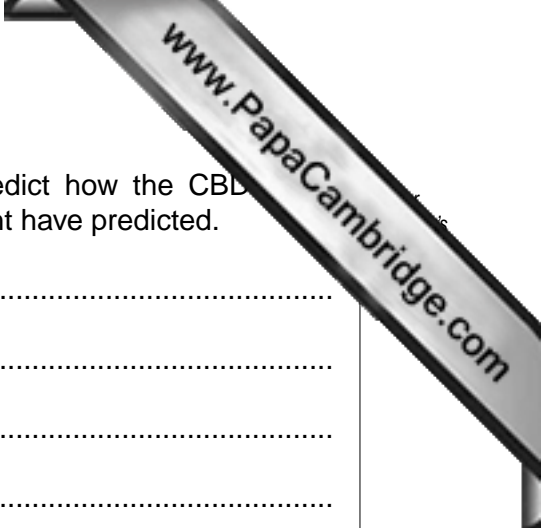
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Key
Edge of CBD according to different techniques
- - - building height ▨ no vehicles
- - - land use
- - - pedestrian flow

0 100 200
metres

Fig. 8



(e) To extend their investigation some students wanted to predict how the CBD change in the future. Suggest **three** changes which they might have predicted.

1

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2

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..... [3]

[Total: 30 marks]

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