

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**GEOGRAPHY**

**0460/04**

Paper 4 Alternative to Coursework

October/November 2006

**1 hour 30 minutes**

Candidates answer on the Question Paper.

Additional Materials: Calculator  
Protractor  
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.

Answer **all** questions.

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	
<b>Q1</b>	
<b>Q2</b>	
<b>Total</b>	

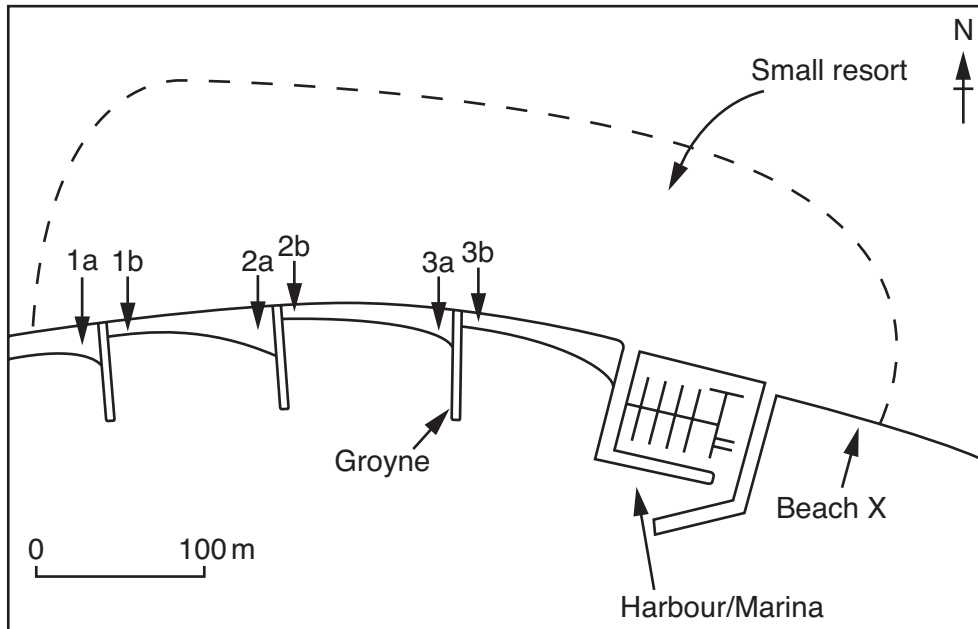
This document consists of **12** printed pages.



- 1 Students investigated wave processes along a coastline to find evidence of longshore drift. The area of coastline was used by tourists. Groynes (wooden structures built out into the sea) had been built to stop the movement of beach material. A plan of the coastline area is shown in Fig. 1. The hypothesis for the coursework was

*'groynes increase the width and height of the beach by stopping longshore drift'.*

**Plan of study area**



**Fig. 1**

- (a) (i) Complete the diagram Fig. 2 (A) on page 3 to show the movement of beach material known as longshore drift. [1]
- (ii) Label the two arrows on Fig. 2 (A) to show
- the direction of longshore drift,
  - the direction of the prevailing winds.
- [1]
- (iii) Explain the process of longshore drift by completing the text box on Fig. 2(B). [2]

Longshore drift diagram and text box

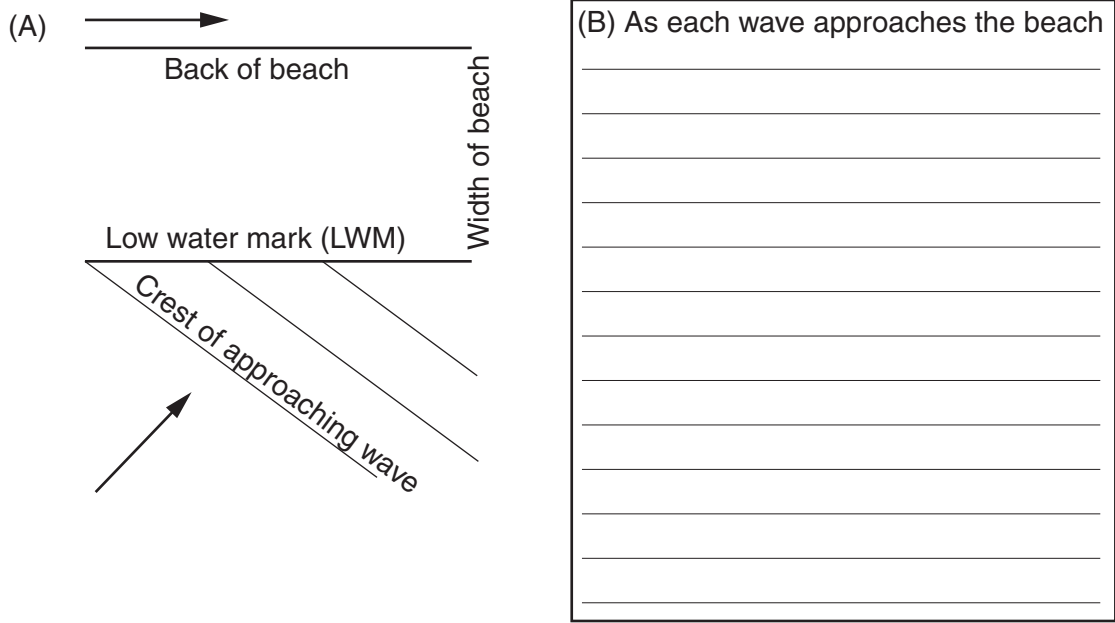


Fig. 2

- (b) (i) The teacher decided to divide the students into three groups. Each group had to complete two beach profiles. Suggest **two** reasons why the teacher made these decisions.

Working in groups

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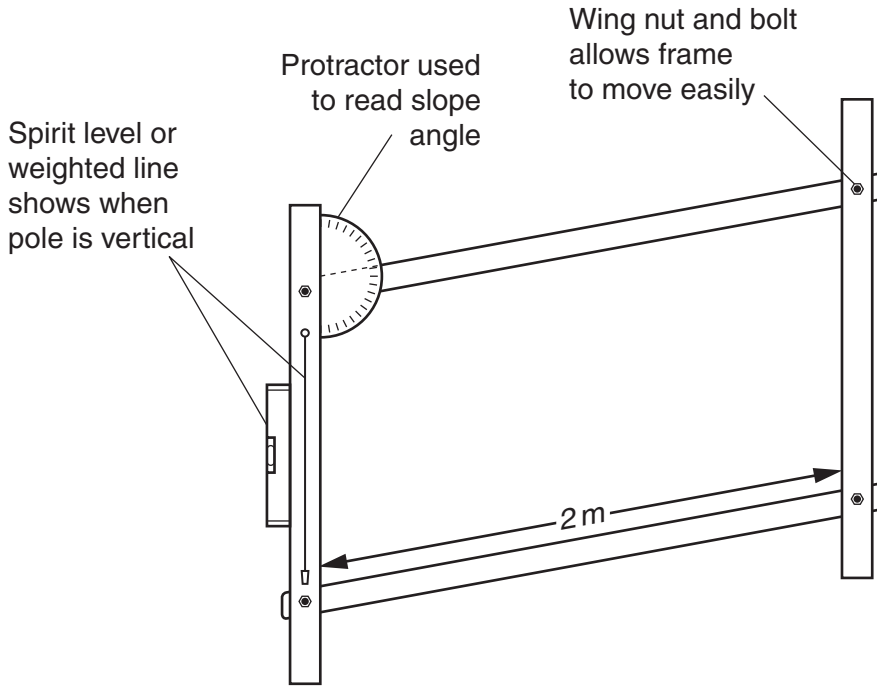
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Complete two profiles

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[2]



**Fig. 3** A pantometer

- (ii) At each site, the students measured the angle of slope of the beach every two metres along a transect line from the low water mark to the back of the beach. The students used a pantometer made using the instructions in Fig. 3 and a long tape measure. Describe in detail how the students measured the beach profile.

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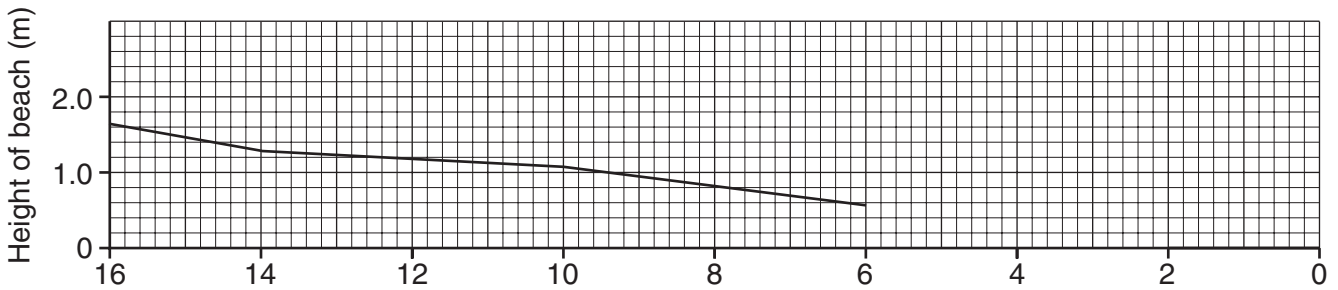
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[3]

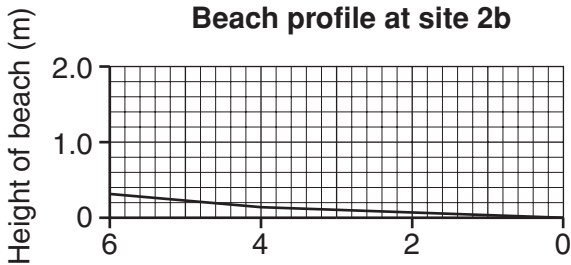
**Table 1**

Site	Back of beach measurement taken every 2 m								width of beach
	14–16 m	12–14 m	10–12 m	8–10 m	6–8 m	4–6 m	2–4 m	0–2 m	
1a		–	4°	8°	8°	5°	5°	4°	12 m
1b		–	–	–	3°	3°	2°	2°	8 m
2a	10°	3°	3°	7°	7°	3°	8°	5°	16 m
2b		–	–	–	–	5°	2°	2°	6 m
3a		–	3°	8°	7°	4°	5°	4°	11 m
3b		–	–	–	4°	3°	2°	2°	7 m

**Beach profile at site 2a**



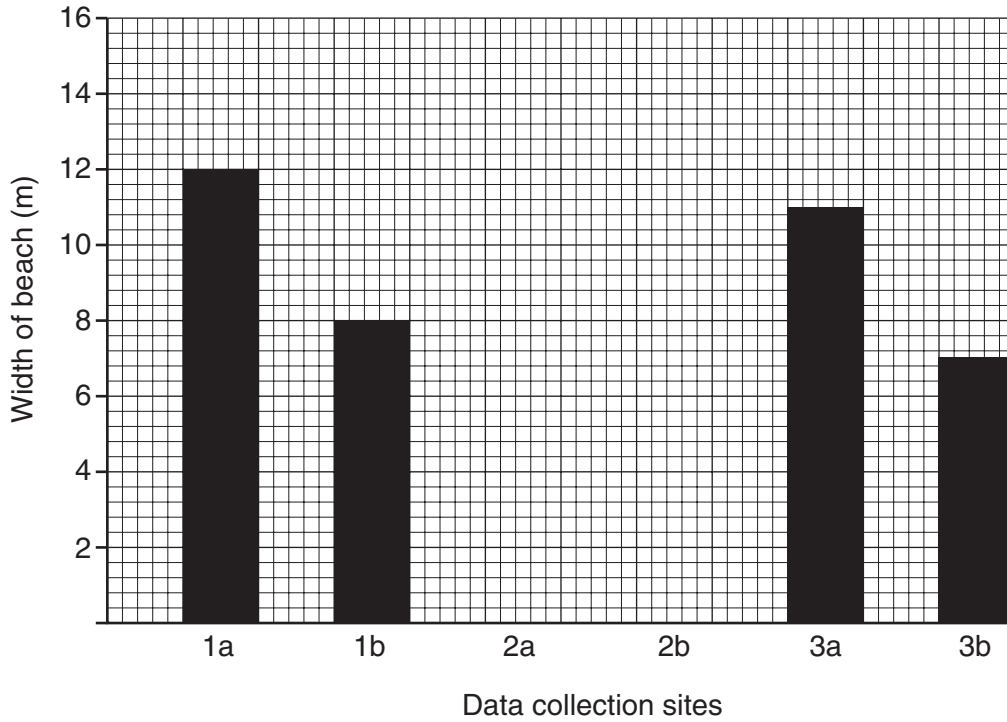
**Beach profile at site 2b**



**Fig. 4**

- (c) (i) Study the results of the beach profile measurements in Table 1. Complete the beach profile for site 2a on Fig. 4. [2]
- (ii) What is the height difference at the back of the beach between sites 2a and 2b? ..... [1]
- (iii) Describe the differences between the beach profiles at sites 2a and 2b. .... [2]

**Bar graph of beach widths**



**Fig. 5**

(d) (i) One student suggested that the widths of the beach at sites 2a and 2b may not be representative of the coastline. Therefore a graph was drawn of all the beach widths. Using the data from Table 1, complete the bar graph for sites 2a and 2b on Fig. 5. [1]

(ii) Calculate the average width of the beaches and plot the average as a line on Fig. 5.

Average width =  [2]

(e) Study Fig.1 and Table 1 again. Describe the overall pattern of slope change shown in Table 1. Suggest reasons for the differences in the beach profiles.

Description .....

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Reasons .....

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.....[4]

(f) (i) Study Fig. 1 again. It shows a harbour/marina has been built along the coastline. Describe the likely height and width of the beach profile at beach X.

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.....[2]

(ii) Suggest how wave processes will be different at beach X compared to the beaches investigated by the students.

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.....[2]

(g) Write a conclusion to this investigation. You should comment on

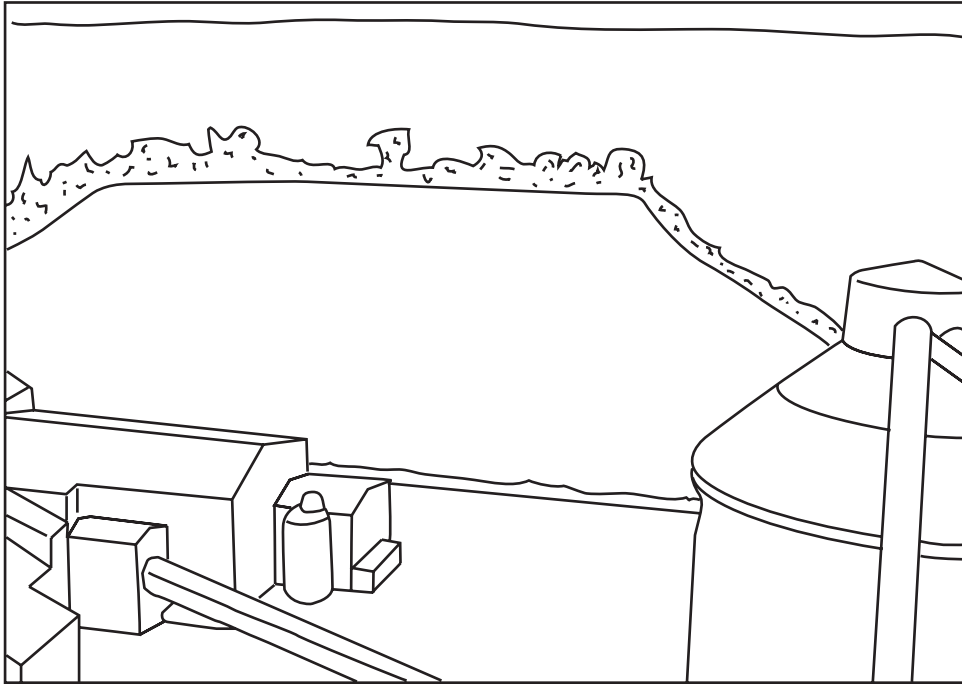
- the accuracy of the hypothesis,
- data to support your decision,
- limitations of the data.

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[Total: 30 marks]

- 2 Students investigated a cement factory close to their town to find out the impact of the factory on the local people of the town. The students read a local newspaper report, visited the factory and interviewed local residents about the cement factory.

**Field sketch and photograph of cement factory**



**Fig. 6**

- (a) Study the photograph. From your observations:
- (i) label clearly the working quarry area and the vehicle storage/parking area on the field sketch,
  - (ii) complete the field sketch by showing and labelling the railway line and the local settlement.



- (b) (i) Study the newspaper report (Fig. 7). This is a secondary data source. Describe one advantage and one disadvantage of using information from a secondary source.

Advantage

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Disadvantage

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.....[2]

**Newspaper report on local cement factory**

The large, ugly cement works, which employs lots of local people, produces cement by combining various raw materials. The main component is crushed chalk (which is brought to the factory by underground pipeline as a slurry). Sand is brought into the factory by large trucks and the clay is extracted from the quarry next to the factory. These are all heated in a furnace to over 1000°C by burning coal. The fumes and waste heat from the furnace come out of the tall chimney which can be seen from a long way away. The fumes have been identified as a source of air pollution and are being constantly monitored by the factory. The final product (the cement) is removed from the factory by road in large trucks and by railway wagons.

**Fig. 7**

- (ii) State **one** positive impact of the cement factory on the people of the town.

.....[1]

- (iii) The students underlined key words in the newspaper report to show the inputs of the cement factory. On Fig. 7 ring the keywords which show the processes and add a dotted line under each output.

process      output

                  .....

Using this information the students started to produce a systems diagram (Fig. 8). Add the keywords you have identified to the systems diagram (Fig. 8). [3]

Systems diagram for cement factory

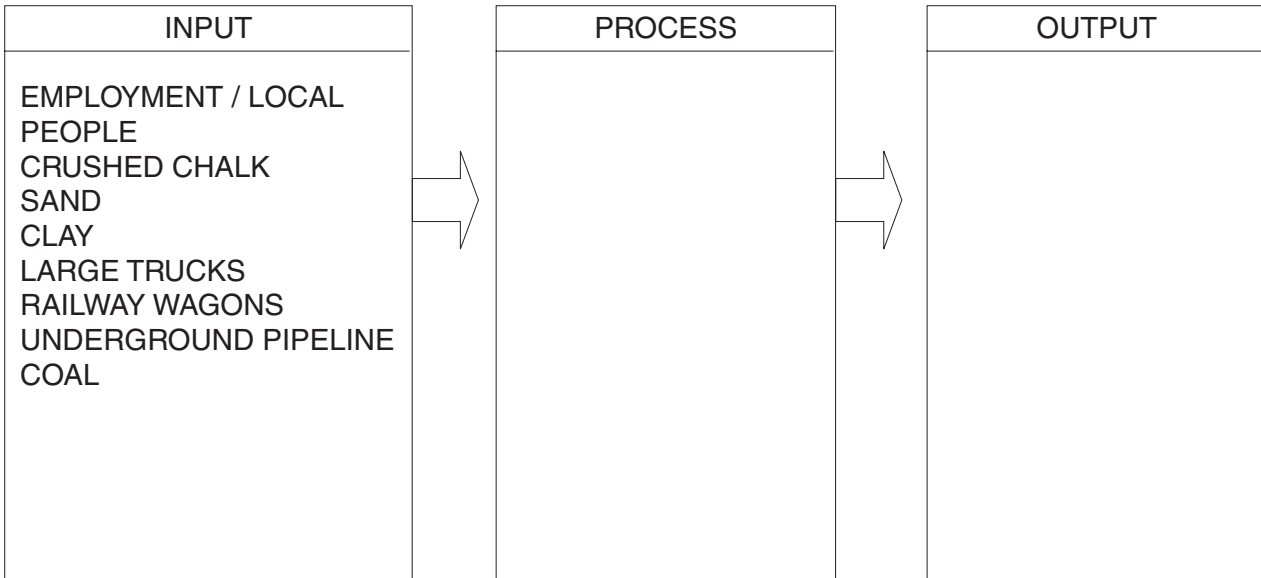


Fig. 8

- (c) (i) The students interviewed 50 local people by visiting every 5<sup>th</sup> house in each street of the local settlement. Why did the students choose this systematic sampling method rather than random sampling?

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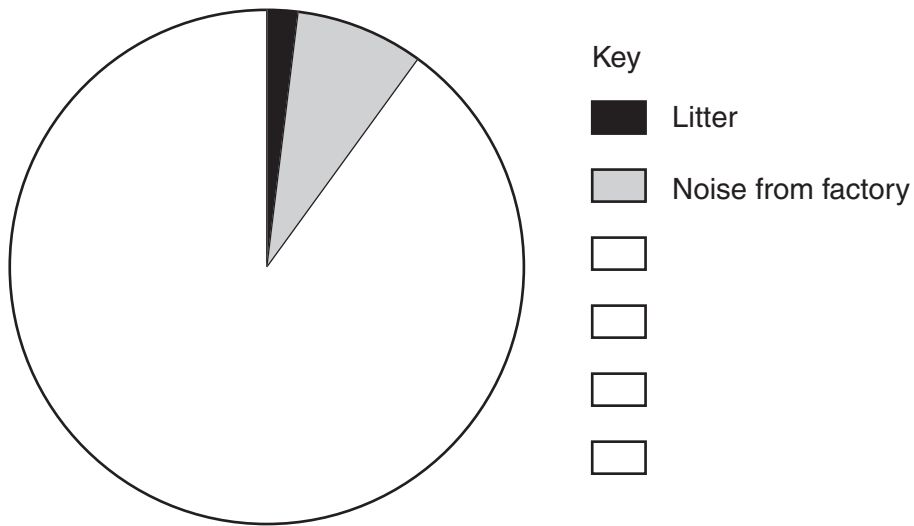
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.....[2]

The interview question was, ‘What do you think is the main impact of the cement factory?’ The results are shown in Table 2.

Table 2

	Result	Degrees for pie chart
Litter	1	7
Noise from factory	4	29
Noise from trucks	6	43
Noise from railway	8	58
Air pollution	20	144
Visual pollution/spoils the view	11	79
Total	50	360



**Fig. 9**

**(ii)** Complete the pie chart (divided circle), Fig. 9, to show people's opinions of the impact of the cement factory. You should include a title and finish the key. [5]

**(iii)** Describe the pattern shown by these results.

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**(d)** Air pollution can affect people's health and cause environmental problems. Describe some of the problems caused by air pollution.

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(e) The raw materials and finished product are transported by road, railway and underground pipeline. Stating relevant data, compare the impact of each transport method on the local people. Suggest reasons for your answer.

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(f) The students decided to extend the investigation to include their own survey of the impact of the cement works on the local environment. Describe in detail possible data collection methods. You should suggest what data the students should collect and how the data could be measured and recorded.

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[Total: 30 marks]

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