Candidate Name	Centre Number	Candidate Number
		2

GCE AS/A level

443/01

GEOGRAPHY – GG3α
INVESTIGATIVE GEOGRAPHY
A. PHYSICAL GEOGRAPHY INVESTIGATION
B. HUMAN GEOGRAPHY INVESTIGATION

P.M. WEDNESDAY, 14 May 2008

1½ hours

For Examiner's use only	
Section A	
Section B	
Total	

ADDITIONAL MATERIALS

In addition to this examination paper, you will need a calculator.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions in the spaces provided.

Your answers should be confined to the lined spaces provided. The lined sheets at the back of the book may only be used if you have made substantial deletions in your answers.

INFORMATION FOR CANDIDATES

You are reminded that marking will take into account the quality of communication used in your answers.

The number of marks is given in brackets at the end of each question or part-question.

SECTION A. PHYSICAL GEOGRAPHY INVESTIGATION

A comparative study of the annual hydrographs of two drainage basins

A student wanted to compare the annual discharges of two small drainage basins and then to consider the geographical reasons for any variations. The basins were of similar size and were only a few kilometres from each other.

Annual discharge for any basin depends on precipitation as well as the physical and human characteristics of the basin.

Maps 1 and **2** on **page 3** show the two drainage basins. The scale of both maps is 1: 25000.

1. *(a)* Give **one** advantage of a 1: 25 000 map over a 1: 50 000 map for this investigation. [1]

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(b) Describe **two** physical characteristics of **Basin A**. [2]

1. .....

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2. .....

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2. Both drainage basins had discharge measuring stations, as indicated on **Maps 1** and **2**, where discharge (flow) was recorded by the Environment Agency. The student obtained the following data: a daily flow figure for every day in the year, a mean daily flow figure for each month and monthly extreme flows i.e. maximum and minimum recorded flows for each month. **Table 1** shows the mean daily flow for the two basins in 2006.

Annual flow records for Basins A and B in 2006

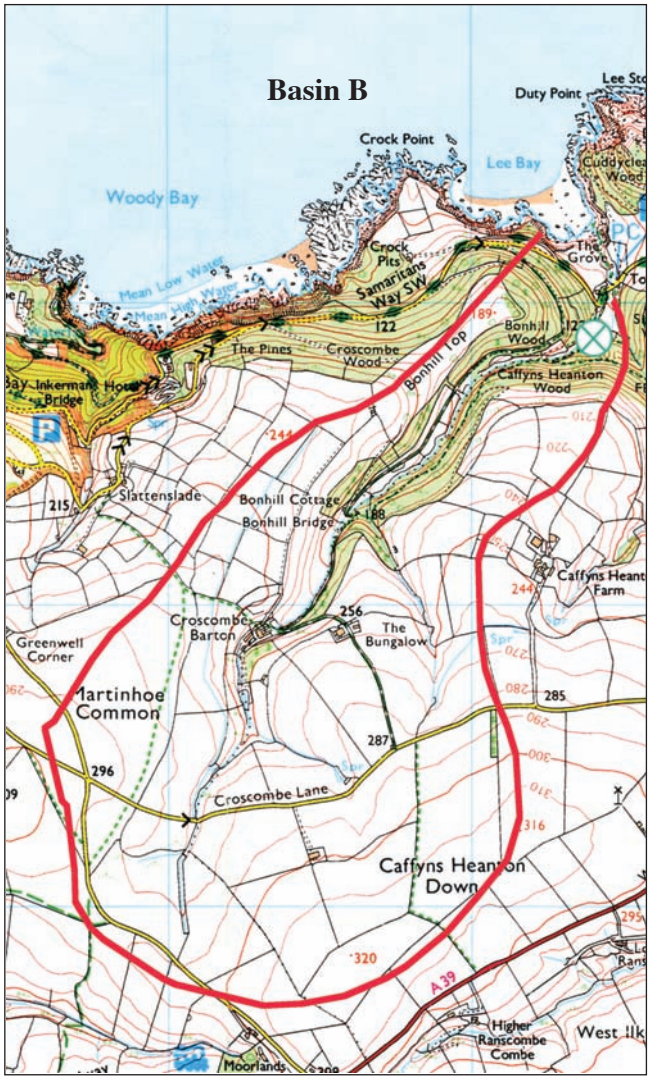
	Basin A mean daily flow cubic metres per second	**Basin B** mean daily flow cubic metres per second
January	11·2	10·3
February	8·4	7·9
March	12·7	11·8
April	10·6	8·4
May	7·3	5·9
June	6·4	4·9
July	5·1	4·0
August	14·8	7·1
September	2·8	2·6
October	8·6	7·9
November	10·9	10·1
December	15·4	11·2

Table 1

Basin A

Map 1

Basin B



Map 2

N

Key:

Discharge measuring station

Drainage basin watershed

[©'Crown Copyright'] Scale 1:25 000

(a) Explain how the mean daily flow data for a month are calculated. [2]

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(b) The student decided to make a comparative analysis based on mean daily flows for each month, as shown in **Table 1**.
Comment on an advantage and a disadvantage of using these mean values for this analysis.

(i) an advantage .....

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(ii) a disadvantage .....

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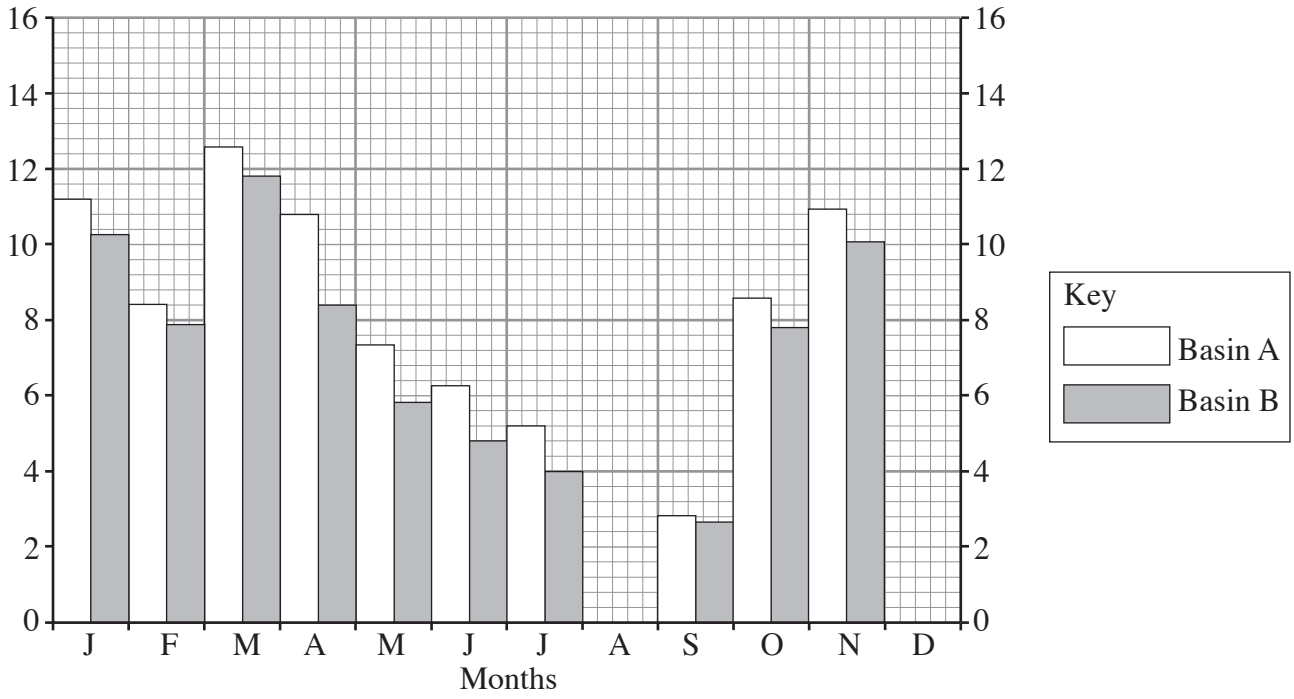
[3]

3. The student then represented the data in **Table 1** by constructing **Graph 1** which is not yet completed.

Mean daily flows for each month for Basins A and B



Graph 1

(a) Complete **Graph 1** by

(i) labelling the vertical axis; [1]

(ii) constructing the bars for the August and December data and completing the appropriate shading. [3]

(b) Give **one** other graphical method that could have been used to represent these data. [1]

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(c) Compare the annual flow patterns shown by **Graph 1**. [4]
Explanations are not required in your answer.

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4. The student then considered the geographical reasons for the differences between the annual flows of the two drainage basins.
The maps showed that one major difference between the two basins was the relative amount of woodland.

(a) Write a hypothesis based on this idea. [2]

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(b) Suggest and justify what information could be collected in order to investigate the influence of woodland on the annual flows in these two basins:

(i) from the maps;

(ii) from fieldwork. [6]

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SECTION B. HUMAN GEOGRAPHY INVESTIGATION

An investigation into the issues concerned with the planning and building of a by-pass road.

A group of students decided to investigate the issues involved in the planning and building of a proposed by-pass road around a small town, Oakford, of 6000 people. At present, several busy main roads go through the centre of this town. **Map 3** on **page 9** shows the outline of the town and its pattern of main roads.

The group gave their investigation the following title:

'How successful will the building of a by-pass around the town be?'

1. *(a)* Give **one** reason why this title was not fully appropriate. [2]

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(b) Suggest and justify a more appropriate title, in the form of a question, for this investigation. [2]

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2. The group knew that some people in the town were in favour of a by-pass, while others were against the idea. They decided to carry out structured interviews with a number of people who held different views.

(a) What is a '*structured interview*'? [2]

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(b) In what ways can structured interviews sometimes be more useful than questionnaires for getting information? [3]

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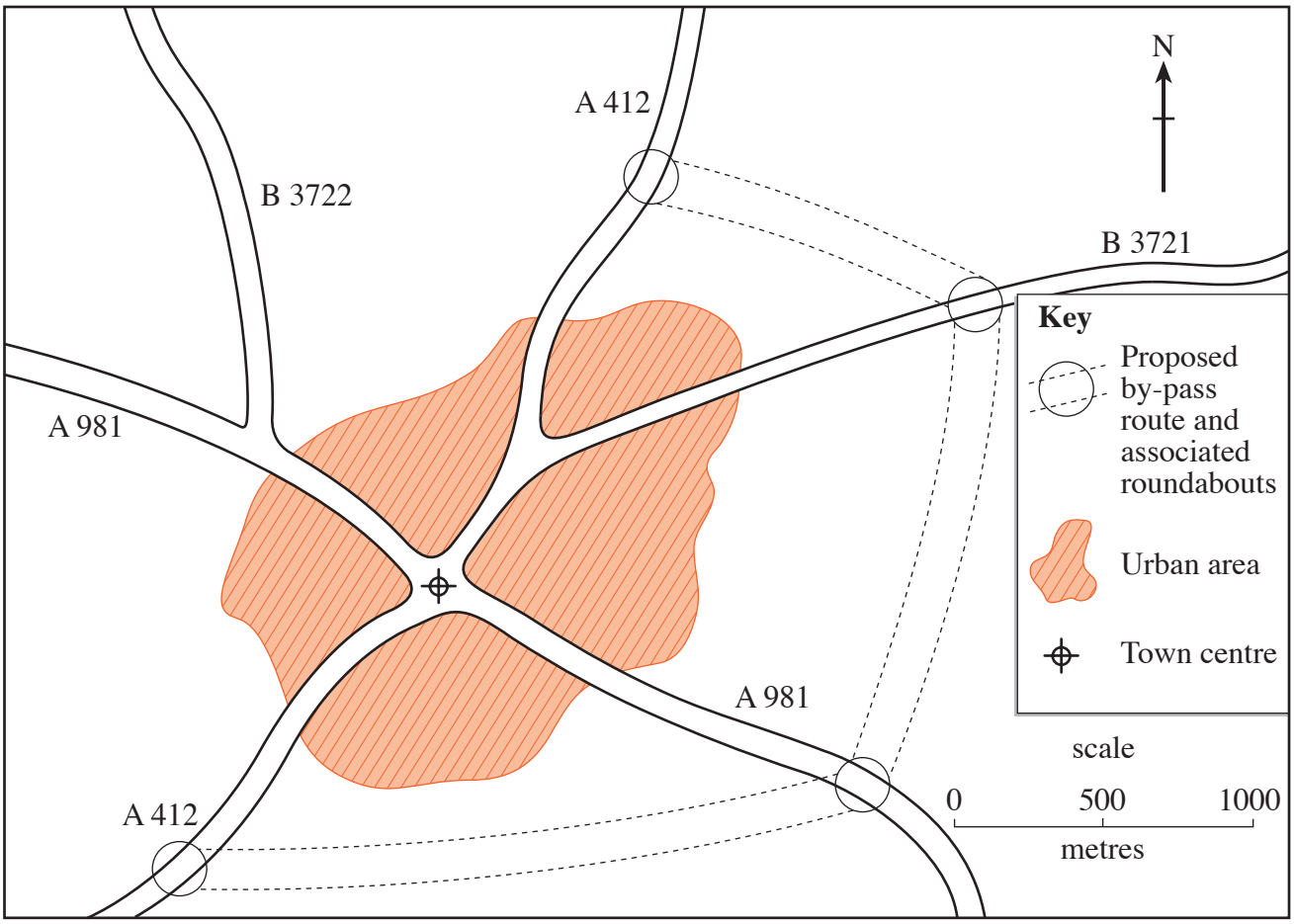
Map of Oakford showing the pattern of main roads.



Map 3

3. Many of the important issues that were raised during the interviews included the following:

1. Disruption to local businesses during construction.
2. Much less traffic in the town after construction.
3. Loss of farmland for crop production.
4. More local customers attracted to town centre after construction.
5. Work for local people during construction.
6. Air and noise pollution during construction.
7. Loss of town centre trade after construction.

Table 2 below is the framework for a cost-benefit table for the proposed by-pass that the student produced.

Use the numbers **1-7** above to place the issues in the appropriate boxes in **Table 2**. Use each number once only.

Cost-benefit table for proposed by-pass

	Costs (disadvantages)	Benefits (advantages)
Economic		
Environmental		

[3]

Table 2

4. In order to develop this study on the proposed by-pass further, the group obtained the details of an environmental quality assessment survey that was carried out by the local planning authority. The survey was undertaken at twelve survey points, as shown on **Map 4** on **page 12**. The values shown are estimates of how the seven environmental factors would change if the by-pass were to be built. **Table 3** below shows the data that were calculated at the survey point in the town centre.

Environmental quality assessment for the town centre, if the by-pass is built

score (0-5) environmental factor	much better environment = 5	slightly better environment = 4	no change = 3	slightly worse environment = 2	much worse environment = 1
noise		4			
air pollution		4			
vibration		4			
smell	5				
landscape quality	5				
traffic congestion	5				
public safety		4			
TOTAL	**15**	**16**			**overall score = 31**

Table 3

The higher the score, the better the environmental impact of the building of the by-pass is considered to be.

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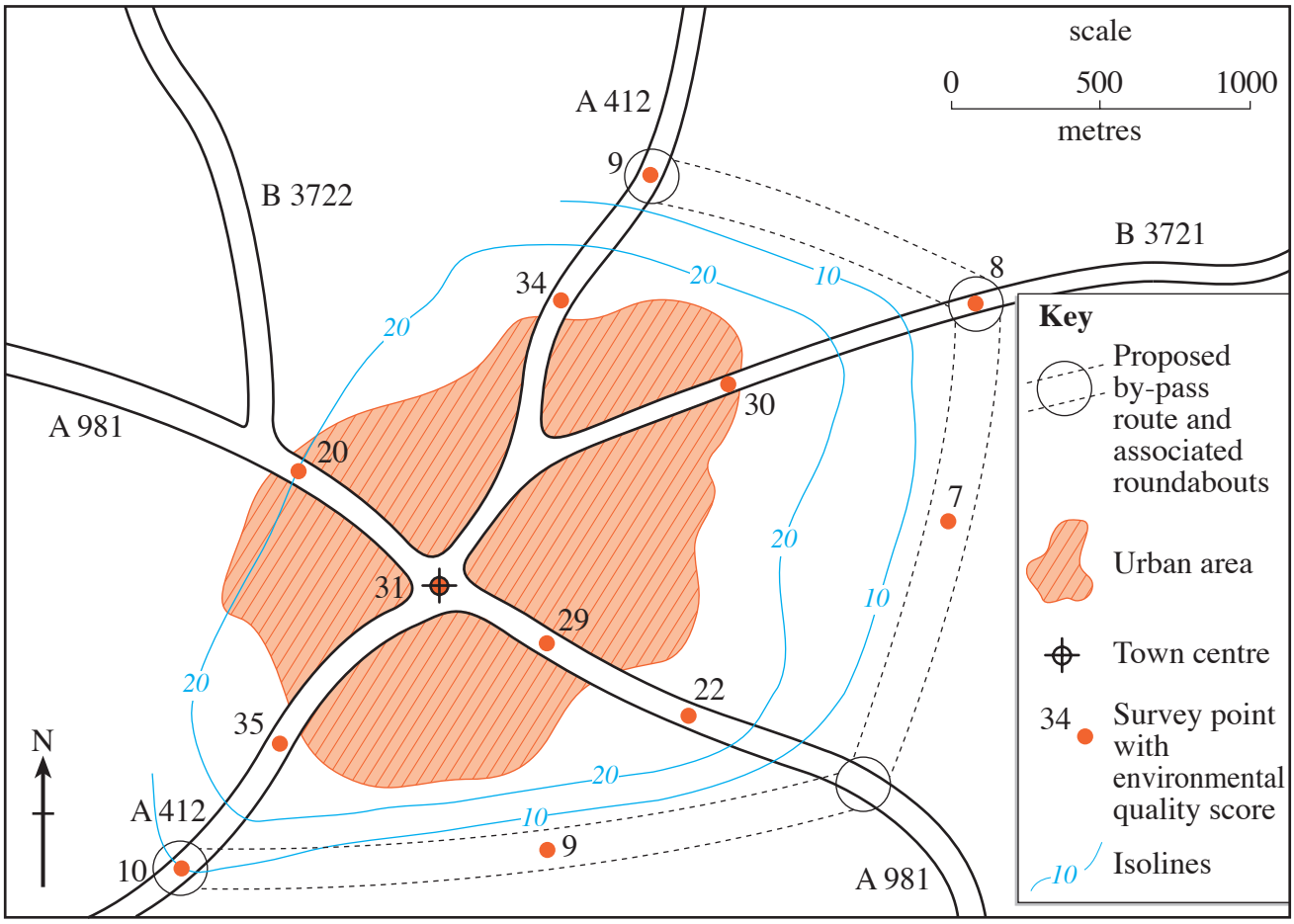
(a) **Map 4** below shows the total overall values for the twelve survey points in and around the town. One of the students used the pattern of values to draw up an isoline map. The map is only partly completed.

Map of Oakford showing the road pattern and the environmental quality scores.



Map 4

(i) Define the term *isoline*. [1]

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(ii) Complete **Map 4** by drawing in an isoline to the value of 30. [2]

(b) Describe the patterns of environmental impact that are shown by the completed isoline map. [4]

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5. The group knew that one very important aspect of the investigation was the volume of traffic going through the centre of the town. They decided to conduct a traffic survey to see the extent of the problem.

Outline the key considerations in planning and conducting this survey. **Maps 3** and **4** may be helpful, plus other information given about this investigation. [6]

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