Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

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General Certificate of Education
January 2006
Advanced Level Examination

ASSESSMENT and QUALIFICATIONS ALLIANCE

GEOGRAPHY (SPECIFICATION A) **GGA7**
Unit 7 Fieldwork Investigation

Wednesday 1 February 2006 1.30 pm to 3.30 pm

For this paper you must have:
- pre-release material (previously despatched);
- a calculator.

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want marked.
- Figure and page numbers prefixed **P** are to be found in the pre-release book.

Information

- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers. All questions should be answered in continuous prose. Quality of Written Communication will be assessed in all answers.

Advice

- Where appropriate, credit will be given for the use of diagrams to illustrate answers and where reference is made to your personal investigative work. You should allocate your time carefully.

For Examiner's Use			
Number	Mark	Number	Mark
1		5	
2			
3			
4			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

There are no questions printed on this page

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Answer **all** questions.

1 Aims

(a) With reference to your own experience of planning a fieldwork enquiry, and the objectives on **page P2**, outline how **Figure P1a** might have provided the idea for this study.

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(4 marks)

(b) Outline the usefulness of the information on Chester, including **Figure P1b**, when considering the viability of this study in Carlisle.

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(2 marks)

6

Turn over for the next question

2 Methods

(a) The method of collecting the temperature data is described in the last two paragraphs on **page P6** and the results are shown in **Figure P5**. Outline the advantages of the method used.

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(6 marks)

(b) The location of the 36 study sites is shown in **Figure P3**. Comment critically on the sample size, frequency and the distribution of the study sites.

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(6 marks)

(c) The Ordnance Survey map extract (**Figure P2**) is an example of secondary data. Suggest another source of secondary data which would be useful in this enquiry and justify its inclusion.

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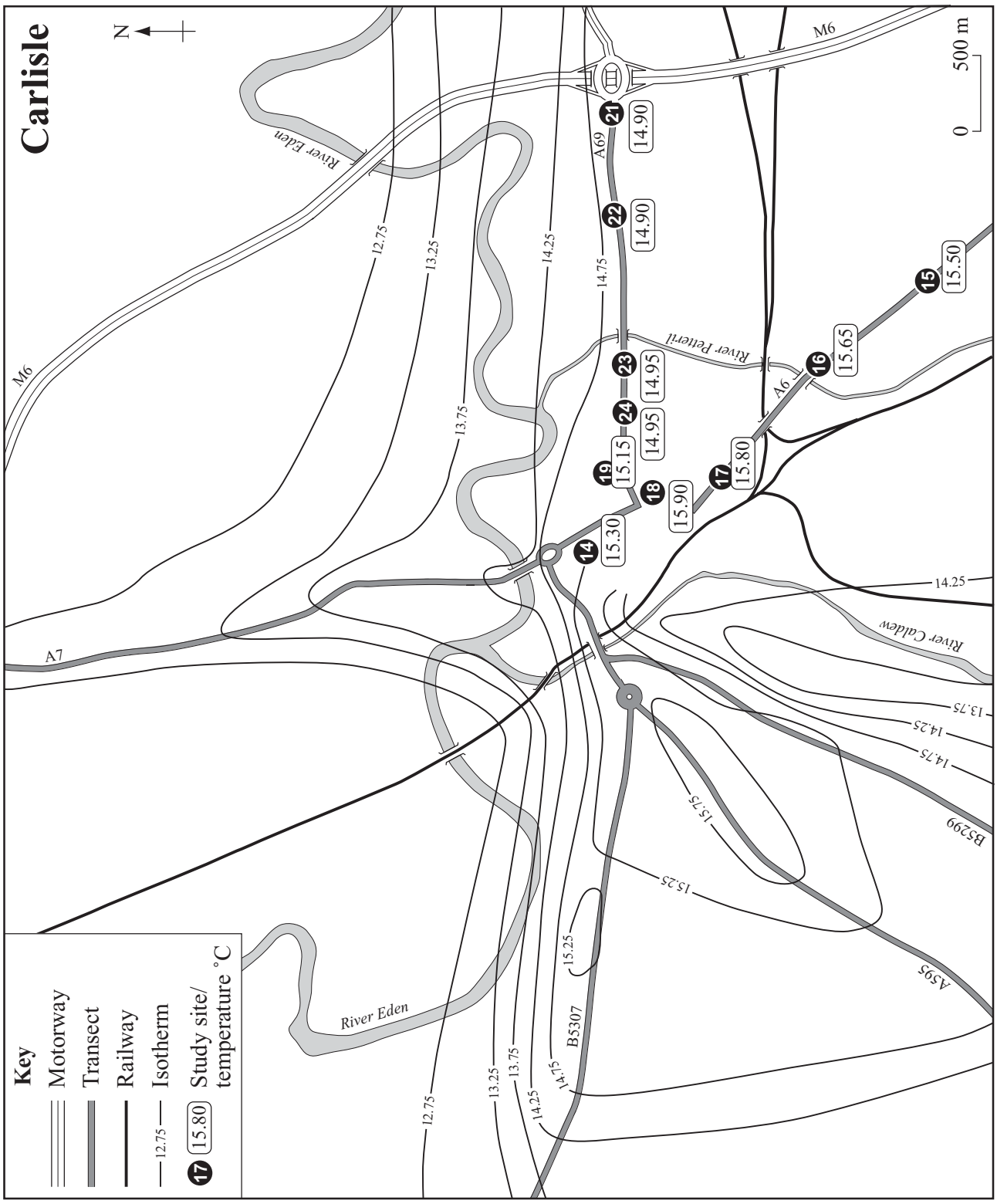
(4 marks)

16

3 Skills, Techniques and Interpretation

(a) (i) Temperature data shown in **Figure P5** are partly plotted on **Figure 1**. Complete **Figure 1** by adding the isotherms for the south eastern sector.

Figure 1



(4 marks)

(ii) With reference to **Figure P1a**, describe and comment on the extent to which **Figure 1** provides evidence to support the expected changes in temperature with distance from the centre.

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(8 marks)

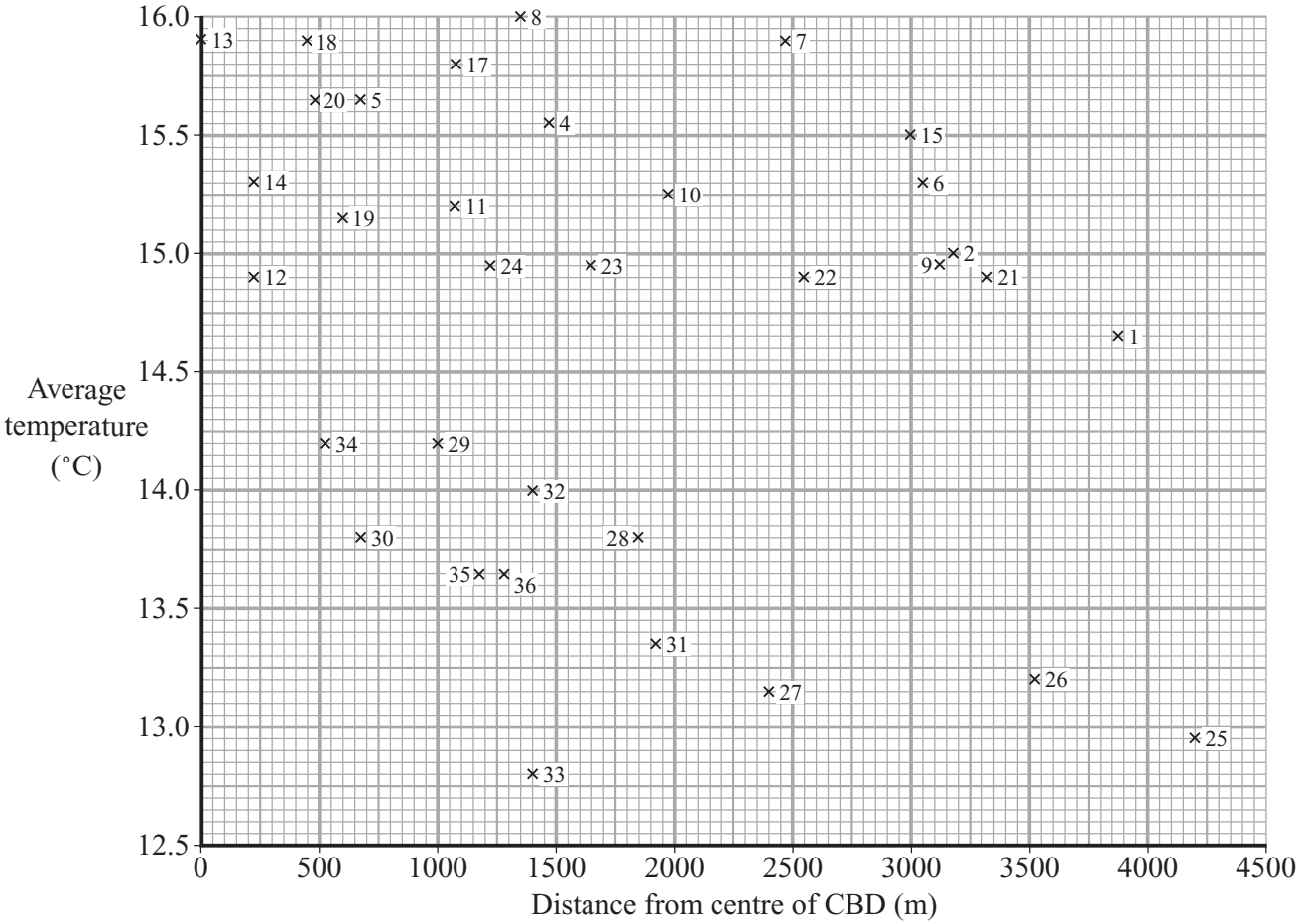
Question 3 continues on page 9

There are no questions printed on this page

(iii) To further investigate the relationship between temperature and distance from the centre, a scatter graph can initially be drawn and a Spearman's rank correlation coefficient calculated.
Figure 2 partly displays the data for the distance from the centre and average temperature. Complete **Figure 2** by adding the information below.

Study site	Distance from the centre (metres)	Average temperature (°C)
3	2300	15.20
16	2025	15.65

Figure 2



(4 marks)

(iv) Using **Figure 2** state your expected/alternative hypothesis.

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(2 marks)

Turn over ▶

(v) Complete **Figure 3** for site 16 and calculate the value of r_s.

Figure 3

Study site number	Distance from the central point of the CBD (x) (metres)	x Ranked	Average Temperature (y) (°C)	y Ranked	d	d^2
1	3875	35	14.65	13	22	484
2	3175	32	15.00	20	12	144
3	2300	25	15.20	22.5	2.5	6.25
4	1475	19	15.55	28	–9	81
5	675	8.5	15.65	30	–21.5	462.25
6	3050	30	15.30	25.5	4.5	20.25
7	2475	27	15.90	34	–7	49
8	1350	16	16.00	36	–20	400
9	3125	31	14.95	18	13	169
10	1975	23	15.25	24	–1	1
11	1075	11.5	15.20	22.5	–11	121
12	225	2.5	14.90	15	–12.5	156.25
13	0	1	15.90	34	–33	1089
14	225	2.5	15.30	25.5	–23	529
15	3000	29	15.50	27	2	4
16	2025	24	15.65			
17	1075	11.5	15.80	32	20.5	420.25
18	450	4	15.90	34	–30	900
19	600	7	15.15	21	–14	196
20	475	5	15.65	30	–25	625
21	3325	33	14.90	15	18	324
22	2550	28	14.90	15	13	169
23	1650	20	14.95	18	2	4
24	1225	14	14.95	18	–4	16
25	4200	36	12.95	2	34	1156
26	3525	34	13.20	4	30	900
27	2400	26	13.15	3	23	529
28	1850	21	13.80	8.5	12.5	156.25
29	1000	10	14.20	11.5	–1.5	2.25
30	675	8.5	13.80	8.5	0	0
31	1925	22	13.35	5	17	289
32	1400	17.5	14.00	10	7.5	56.25
33	1400	17.5	12.80	1	16.5	272.25
34	525	6	14.20	11.5	–5.5	30.25
35	1175	13	13.65	6.5	6.5	42.25
36	1275	15	13.65	6.5	8.5	72.25

$\sum d^2 = 9912$

$$r_s = 1 - \left(\frac{6 \sum d^2}{n^3 - n} \right)$$

$$= 1 - \left(\frac{6 \times 9912}{36^3 - 36} \right)$$

$$= 1 - \left(\text{————} \right)$$

$$= 1 -$$

$$=$$

(3 marks)

(vi) Using the table of critical values below and **Figure 2**, assess the extent to which there is a relationship between distance from the central point of the CBD and the temperature.

	Significance level	
Sample size	0.05	0.01
35 is the nearest sample size in table of critical values to actual sample size	0.282	0.399

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(6 marks)

Turn over ▶

(b) (i) **Figure 4** is a black and white photocopy of the photograph of study site 13 shown in **Figure P4**. Label **Figure 4** to identify the characteristics which might be expected to affect the temperature in the area shown.

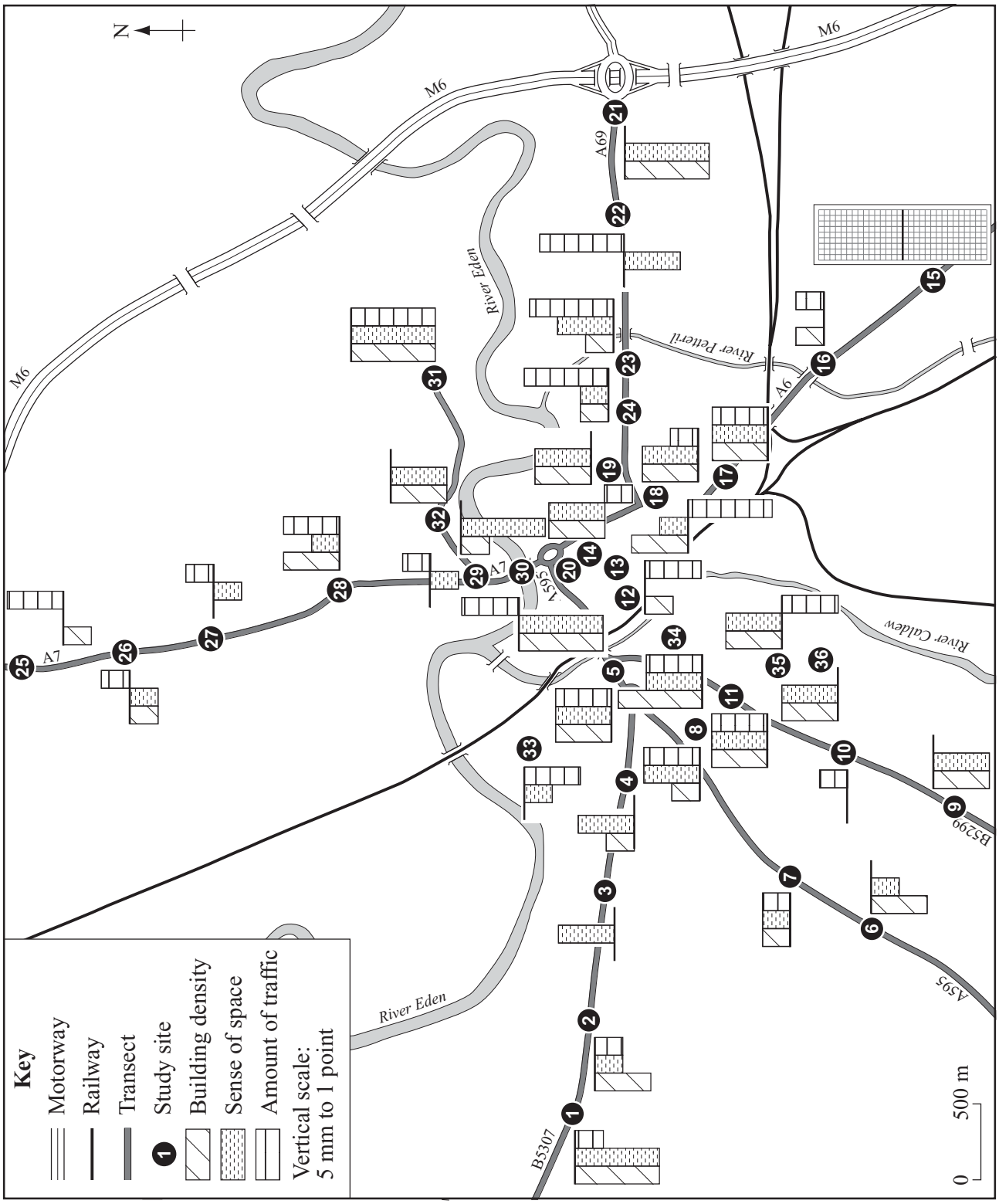
Figure 4

(5 marks)

Question 3 continues on the next page

(ii) The results of the environmental characteristics survey are shown in **Figure P6**. These are partly presented in **Figure 5**. Complete **Figure 5** by adding the information for study site 15.

Figure 5



(3 marks)

(iii) Using evidence from **Figures P6**, **1** and **5**, summarise the impact of land use and related environmental characteristics on an urban heat island in Carlisle.

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(10 marks)

Question 3 continues on the next page

(c) **Figure P2** shows the relief of the study area, whilst the temperature data are given in **Figure P5** and presented in **Figure 1**. Using evidence from these resources, assess the importance of relief in determining an urban heat island in Carlisle.

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(10 marks)

55

4 Conclusion

Write a summary of your findings for this enquiry with specific reference to the aim and objectives given on **page P2**. Using your own experience of conducting an enquiry, you should, in addition, consider the reliability of these findings and suggest how this enquiry could be improved and extended.

Summary .....

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Question 4 continues on the next page

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Reliability .....

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Improvements and Extensions .....

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(10 marks)

10

5 Enquiry Related Issues

(a) Only one aspect of urban microclimates has been studied in this enquiry. Other possible aspects which could have been considered are suggested by **Figure P7**. Choose **one** other aspect of urban microclimate that you could investigate to develop this enquiry.

Aspect of urban microclimate identified .....

Outline an objective relating to this; justify its inclusion in the development of this enquiry and briefly outline the relevant theoretical background.

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(6 marks)

Question 5 continues on the next page

(b) For your chosen aspect of urban microclimate, identify one item of primary data collection which would be relevant to your objective. Describe how you would collect your data.

Item of primary data .....

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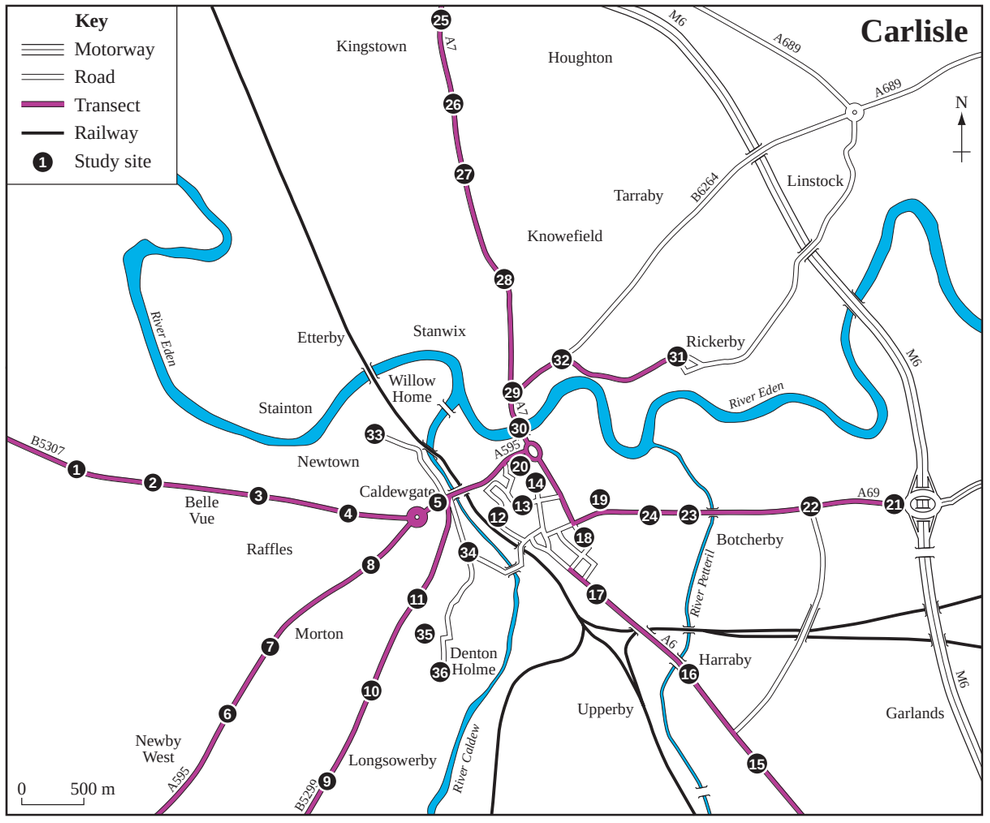
(7 marks)

13

END OF QUESTIONS

Figure P4



Turn over ▶