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School code

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Attach your  
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Book

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of

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books used

External assessment 2023

Question and response book

# Earth & Environmental Science

## Paper 2

### Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

### General instructions

- Answer all questions in this question and response book.
- Write using black or blue pen.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

### Section 1 (52 marks)

- 5 short response questions

### Section 2 (18 marks)

- 1 extended response question



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## Section 1

### Instructions

- If you need more space for a response, use the additional pages at the back of this book.
    - On the additional pages, write the question number you are responding to.
    - Cancel any incorrect response by ruling a single diagonal line through your work.
    - Write the page number of your alternative/additional response, i.e. See page ...
    - If you do not do this, your original response will be marked.
  - This section has five questions and is worth 52 marks.
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**QUESTION 1 (7 marks)**

Refer to Stimulus 1 in the stimulus book.

a) Explain why groundwater is a renewable resource.

*[1 mark]*

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b) Explain the change in recharge between 1970 and 2023. Support your response using evidence from the graphs.

*[3 marks]*

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c) Make a justified prediction about the future sustainability of groundwater in the basin. [3 marks]

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**QUESTION 2 (9 marks)**

Refer to Stimulus 2 in the stimulus book.

- a) Explain why volcanoes form in Iceland.

[3 marks]

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In 2010, *Eyjafjallajökull* erupted with a volcanic explosivity index of 4 (0: non-explosive, 8: mega-colossal). The ash clouds produced disrupted air travel in Iceland and nearby countries.

- b) Explain why there was no recorded reduction in global temperature associated with this eruption.

[2 marks]

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c) Predict another effect of the ash clouds. Explain your reasoning.

[2 marks]

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d) Explain a mitigation strategy Reykjavík could establish to reduce hazardous outcomes from a nearby volcanic eruption.

[2 marks]

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c) Explain one advantage of using pollen to indicate historical climate change.  
Support your response with evidence from the graphs.

*[2 marks]*

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**QUESTION 5 (11 marks)**

- a) Explain the effect of land clearing on the composition of Earth's atmosphere. *[4 marks]*

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Refer to Stimulus 5 in the stimulus book.

- b) Predict the impact on the composition of the atmosphere if the global methane budget stays the same. *[4 marks]*

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c) Draw a conclusion about the significance of anthropogenic contributions to the methane budget and the effect on global temperatures. Explain your reasoning.

*[3 marks]*

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## Section 2

### Instructions

- This section has one question and is worth 18 marks.
  - Respond in 300–350 words.
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c) Which pH should the company use to process the sample? Justify your response.

*[2 marks]*

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**END OF PAPER**

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