FOR OFFICIAL USE

Total Marks

X055/11/01

NATIONAL QUALIFICATIONS 2013

FRIDAY, 7 JUNE
1.00 PM – 3.00 PM

MANAGING ENVIRONMENTAL RESOURCES
INTERMEDIATE 2

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day Month Year

Scottish candidate number

Number of seat

1. Attempt **all** questions in Section 1. In Section 2 there is a choice.
2. Read the whole of each question carefully before you answer it.
3. Write in the spaces provided.
4. Additional space for answers will be found at the end of the book. If further space is required, supplementary sheets may be obtained from the Invigilator and should be inserted inside the **front** cover of this book.
5. There is a separate Ordnance Survey Map Extract for use with Question 8.
6. Rough work, if any should be necessary, should be written in this book and then scored through when the fair copy has been written.
7. Before leaving the examination room you must give this book to the Invigilator. If you do not, you may lose all the marks for this paper.

DO NOT WRITE IN THIS MARGIN

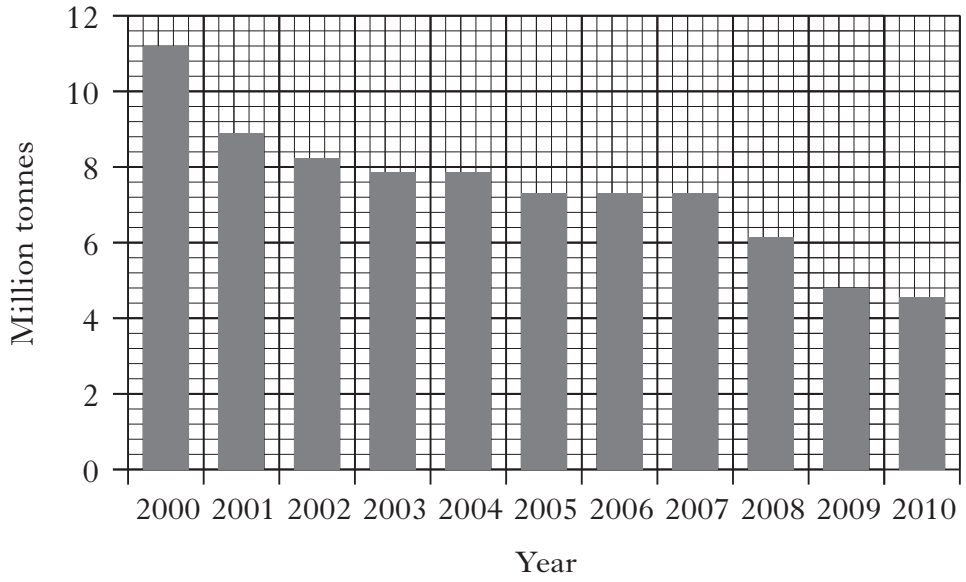
Marks

SECTION 1

Answer ALL questions in the spaces provided.

Use the map extract to answer question 8.

1. (*a*) The graph below shows the total waste sent to landfill from 2000 to 2010.



(i) How much waste was sent to landfill in 2010?

_____ million tonnes. **1**

(ii) Give the general trend for waste being sent to landfill.

_____ **1**

(*b*) Suggest **one** other method to dispose of biodegradable waste.

_____ **1**

(*c*) Give **two** ways in which your local authority could encourage recycling.

1 _____

2 _____ **2**

Marks

1. (continued)

(*d*) Explain why it is important that the consumption rate of non-renewables is reduced.

_____

_____

_____ **2**

[Turn over

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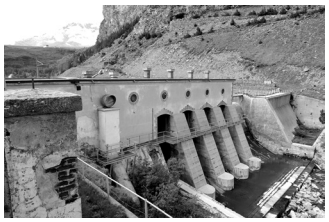
2. (*a*) The table below gives some examples of the advantages and disadvantages of using different sources to generate electricity.

Source of Electricity Generated	*Example of Advantage*	*Example of Disadvantage*
Coal fired power station 	• Very large amounts of electricity can be generated in one place, fairly cheaply.	• Ash is produced which has to be disposed of.
Nuclear power station 		
Hydro electric power station 		• Restricted to being built in certain locations.

(i) Complete the table by adding:

1 **one** advantage and **one** disadvantage of nuclear generated electricity; **2**

2 **one** advantage of hydro generated electricity. **1**

(ii) Name **one** gas that contributes to acid rain when it is released from a coal fired power station.

_____ **1**

(iii) State how the production process in a coal fired power station can be modified to reduce environmental effects.

_____ **1**

Marks

2. (*a*) (continued)

(iv) Describe the effect of acid rain on

1 Wildlife _____

_____

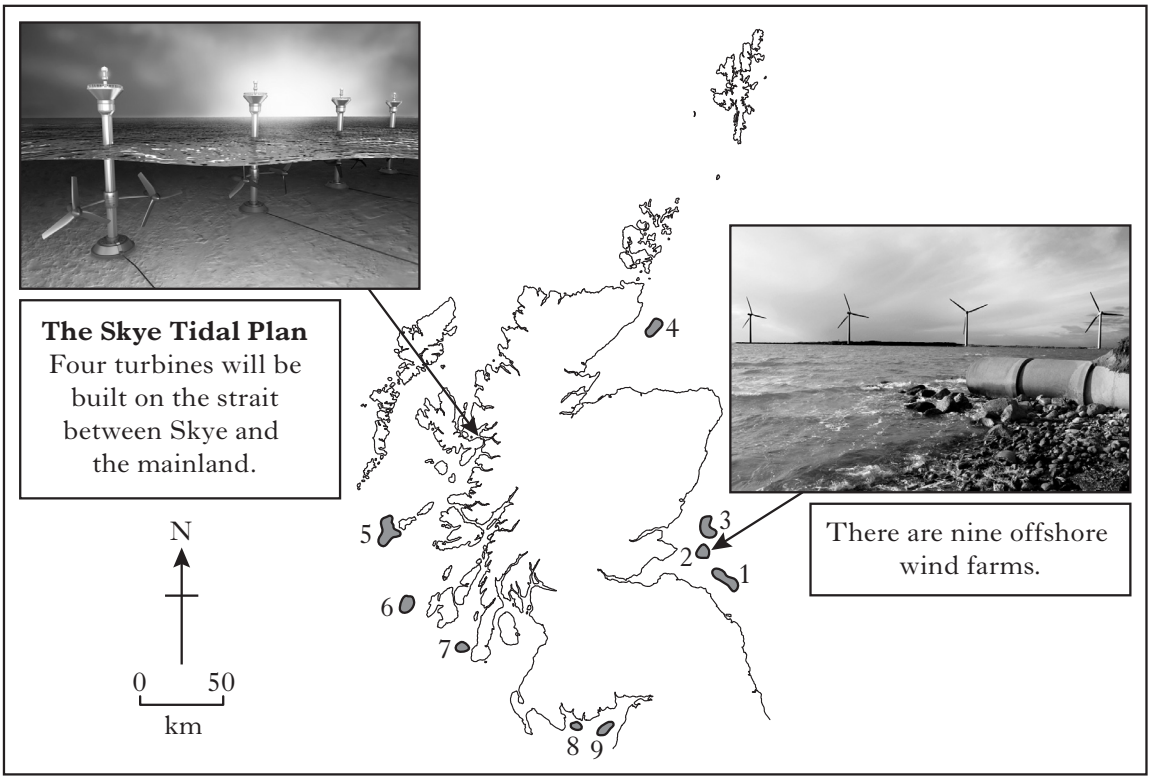
2 Buildings _____

_____ **2**

(*b*) Scotland's marine environment is helping to meet Scotland's energy demand. The map below shows the proposed Skye tidal plan and offshore wind farms.

The Skye Tidal Plan
Four turbines will be built on the strait between Skye and the mainland.

There are nine offshore wind farms.



(i) Give **one** negative impact of offshore wind farms.

_____ **1**

(ii) Suggest **one** advantage of using the fast tidal currents to generate electricity compared to using wind farms.

_____

_____ **1**

(iii) Name **one** other way the sea can be used to generate electricity.

_____ **1**

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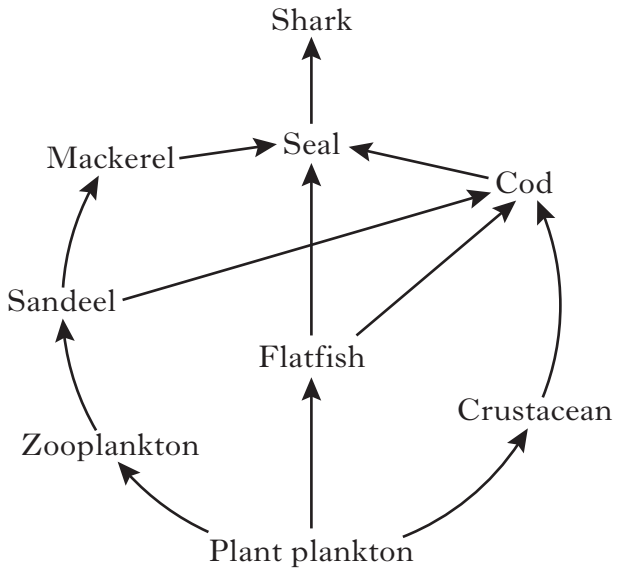
3. The diagram below shows part of a North Sea food web.



(*a*) Use the information from the diagram to answer the following questions.

(i) Name **one** producer.

_____ **1**

(ii) Name **one** carnivore.

_____ **1**

(iii) Give an example of a **secondary** consumer.

_____ **1**

(iv) Complete the following food chain.

		seal	→	

1

(v) Describe an example of competition in this food web.

_____

_____ **1**

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3. (*a*) (continued)

(vi) Cod numbers are increasing due to a change in fishing policy.

Predict the effect this would have on the Zooplankton population.

Underline your answer and give a reason for it.

The numbers of Zooplankton would *increase* / *decrease* / *stay the same*.

Reason _____

_____

_____ **1**

(*b*) A recent survey has shown that the number of harbour seals has dropped from 29 000 to 20 424.

(i) Calculate the percentage decrease in the harbour seal population.

Space for calculation

_____ % **1**

(ii) Suggest **two** reasons for this decrease in the harbour seal population.

1 _____ **1**

2 _____ **1**

(*c*) Give **one** reason why most plant plankton are found in the top 5 cm layer of the sea.

_____ **1**

[Turn over

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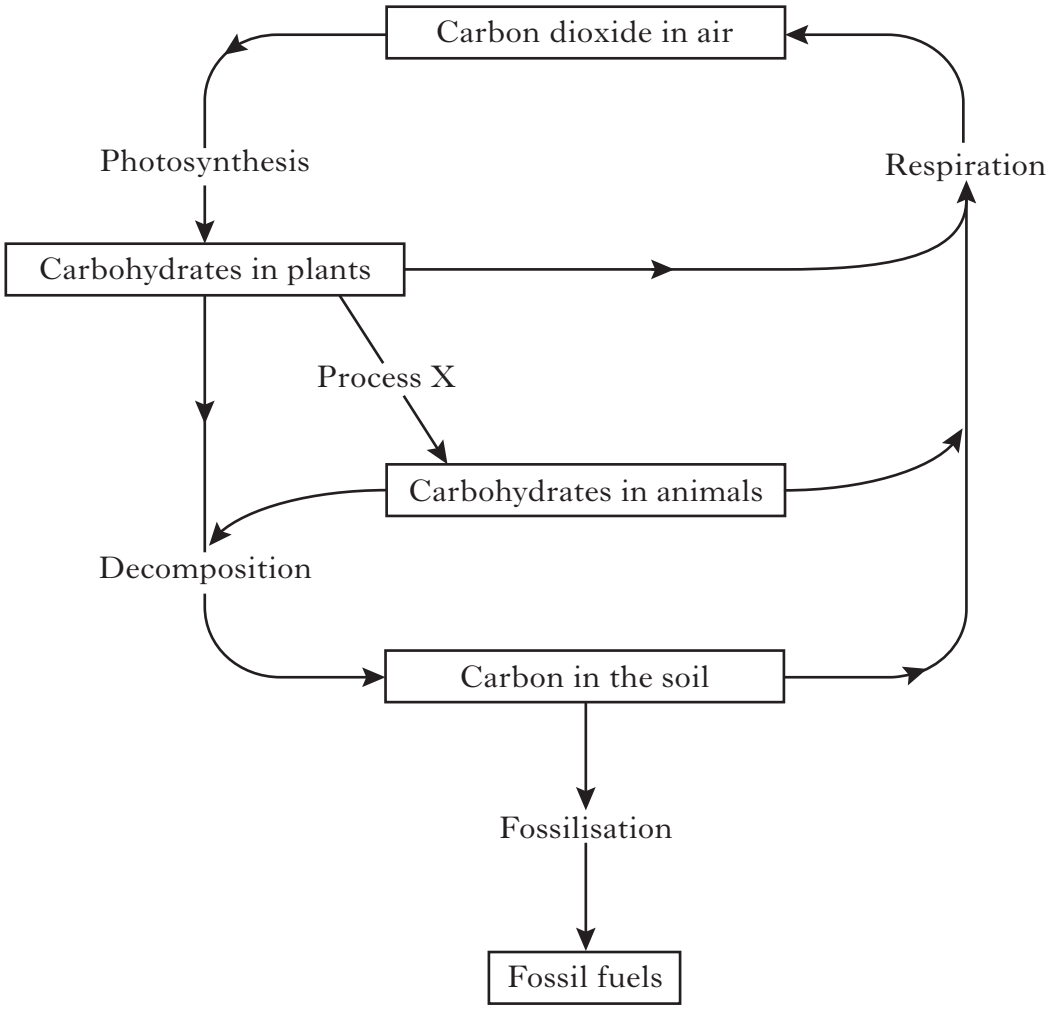
4. The diagram below shows the cycling of carbon.



(*a*) Complete the diagram by:

(i) naming the process X;

_____ **1**

(ii) adding **one** arrow to represent combustion/burning. **1**

(*b*) Complete the word equation for the process of respiration.

Carbohydrate + _____ ⇢ Energy + Carbon dioxide + _____. **1**

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4. (continued)

(*c*) Why is the cycling of nutrients such as carbon important?

_____

_____

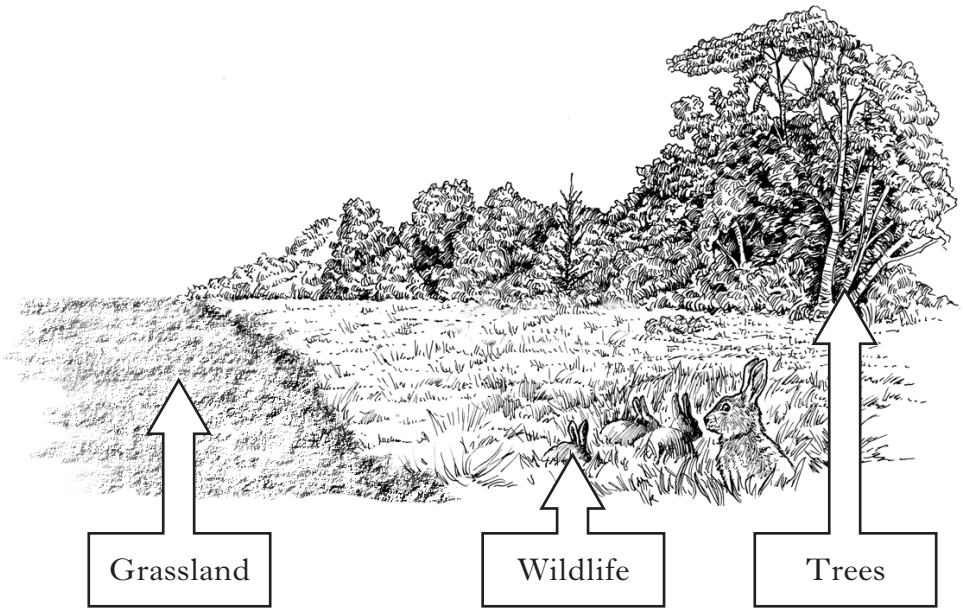
_____ **1**

(*d*) Name **one** other nutrient which can be cycled like carbon.

_____ **1**

[Turn over

5. An area was identified where villagers wished to encourage wildlife. This area is shown in the diagram below.



(*a*) An investigation was carried out to count the number of animal species found in the tree, wildlife and grassland areas.

Yellow rattle seeds were then sown in the wildlife area. This plant inhibits the growth of grass. Other wildlife attracting plants were also introduced into this area.

The investigation was repeated two years later and the results are shown in the table below.

Time	*Year 0*				*Year 2*		
Area	*Grassland*	*Wildlife*	*Trees*		*Grassland*	*Wildlife*	*Trees*
Average Number of Animal Species	3	4	12		4	11	14

5. (*a*) (continued) *Marks*

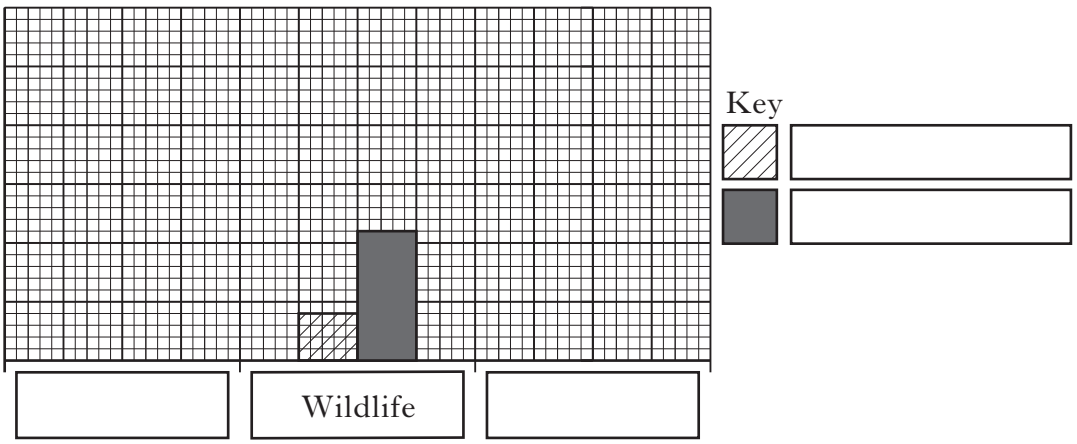
(i) Using the information from the table, complete the bar graph by:

1 adding the scale and label to the vertical (y) axis:

2 adding labels to the horizontal (x) axis;

3 completing the bar graph and key.

(An additional grid, if required, will be found on *Page twenty-nine*.)



3

(ii) Were the villagers successful?

Underline your answer and give a reason.

Yes / No

Reason _____ **1**

(iii) Give **one** reason why the number of animal species increased after planting.

_____ **1**

(iv) How were the results of the investigation made reliable?

_____ **1**

(*b*) Describe a technique you could use to sample plants.

_____

_____ **2**

(*c*) Yellow rattle forms a symbiotic relationship with grass, in which the grass becomes weaker. Name this type of feeding relationship.

_____ **1**

Marks

5. (continued)

(*d*) The diagram below shows the leaves from some common trees.

					
Oak	Sycamore	Ash	Horse Chestnut	Elm	Silver Birch

(i) Complete the key below using the information from the diagram.

1 { Leaf as leaflets ..... Go to 2
Leaf as one single leaf ..... [ ]

2 { Leaflets opposing ..... Ash
Leaflets radial ..... Horse Chestnut

3 { Lobes present ..... Go to 4
Lobes absent ..... Go to 5

4 { [ ] ..... Oak
Serrated/jaggy Edge ..... Sycamore

5 { Leaf with long Stalk ..... Silver Birch
Leaf with short Stalk ..... [ ]

1

(ii) Give **one** similarity and **one** difference between an Elm leaf and a Silver Birch leaf.

Similarity _____ **1**

Difference _____

_____ **1**

[Turn over for Question 6 on *Page fourteen*

Marks

6. Read the passage below and answer the questions which follow.

Oh Flowers of Scotland

Scotland is well known for its magnificent flora, from Arctic alpines on some high slopes to cotton grass in acid bogs. Other species are found in the machair.

The machair is a low lying fertile plain which is found only in north-west coastal areas of Scotland. It is influenced by the warm Gulf Stream and Atlantic storms. Its soil is rich in lime due to the high sea-shell content. When this soil is blown inland it neutralises the acidity of peat bogs and results in highly fertile grassland. This leads to unique ecosystems with flowers such as orchid and harebell, and birds such as corncrake and dunlin. Some machairs are threatened by erosion due to rising sea levels. This ecosystem depends on a carefully managed grazing system using Highland cattle.

In other parts of Scotland, hedgerows have been ripped out, bogs and marshes drained and road verges devastated by grass-cutting machinery. This has been done to make more land available for agriculture or forestry or to make the environment look neater and tidier. Nowadays farmers can get grants to plant beetle banks, which are special areas to attract beetles, and to leave wildlife corridors at the perimeters of fields. Beetle banks help reduce the use of pesticides on cereal crops.

(*a*) (i) From the passage, give **two** examples of a habitat.

1 _____ 2 _____ **1**

(ii) Name **two** abiotic factors which contribute to the development of the machair.

1 _____ 2 _____ **1**

(*b*) Suggest **one** reason why Highland cattle, a small breed, is the preferred type of cattle allowed to graze on the machair.

_____ **1**

(*c*) Give **one** reason why sea levels could be rising.

_____ **1**

(*d*) Explain **one** environmental advantage of planting a beetle bank.

_____

_____

_____ **1**

Marks

6. (continued)

(*e*) Wildlife corridors can increase biodiversity. What is meant by biodiversity?

_____ **1**

(*f*) Corncrake is an endangered species. Name **one** plan which aims to conserve the numbers of an endangered species.

_____ **1**

(*g*) **Underline** the correct term which describes Highland cattle, from the list below.

Feral *Domesticated* *Non-domesticated* *Naturalised* **1**

(*h*) Give **one** sustainable method practised in commercial forestry.

_____ **1**

[Turn over

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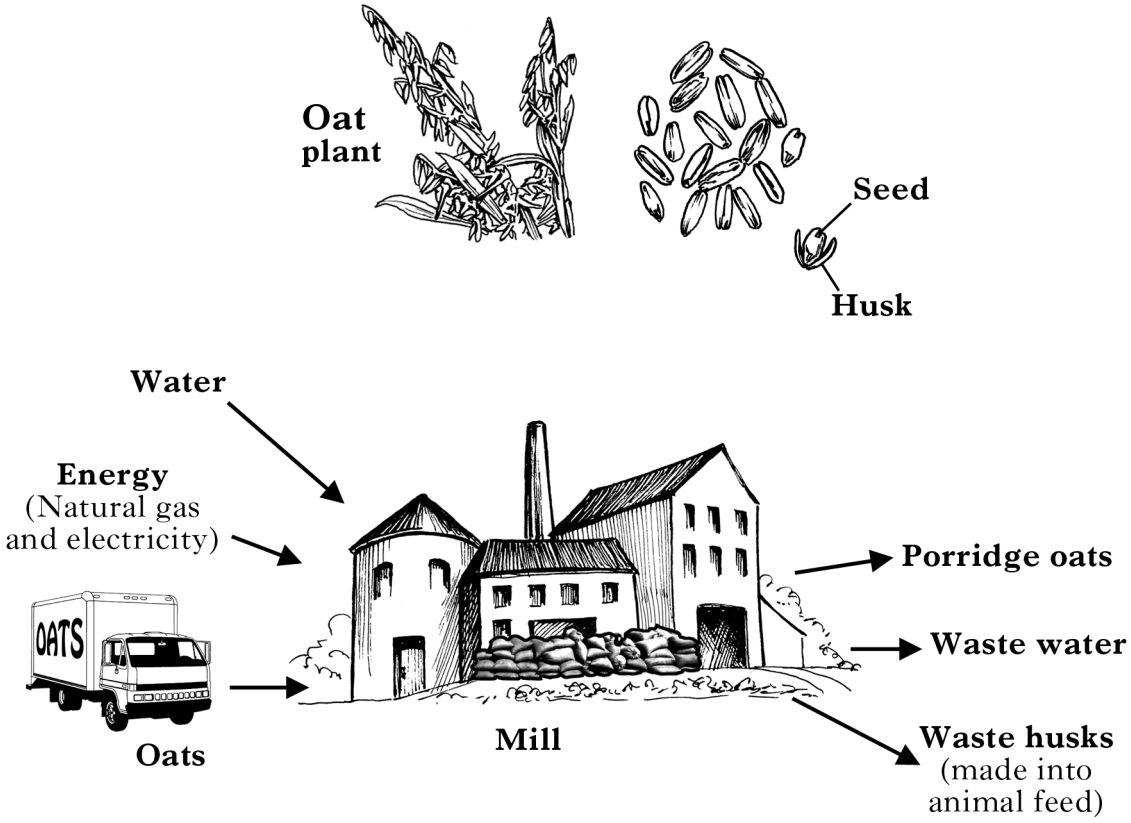
Marks

7. In Scotland, a mill processes the cereal, oats, into porridge oats. Scottish farms grow most of these oats but some are imported. The porridge oats are sent all over the world. The diagram below shows some of the inputs and outputs of the mill.



(*a*) From the diagram:

(i) name the natural resource which is processed at the mill;

_____ **1**

(ii) name **two** man-made resources required to process the oats;

1 _____ 2 _____ **1**

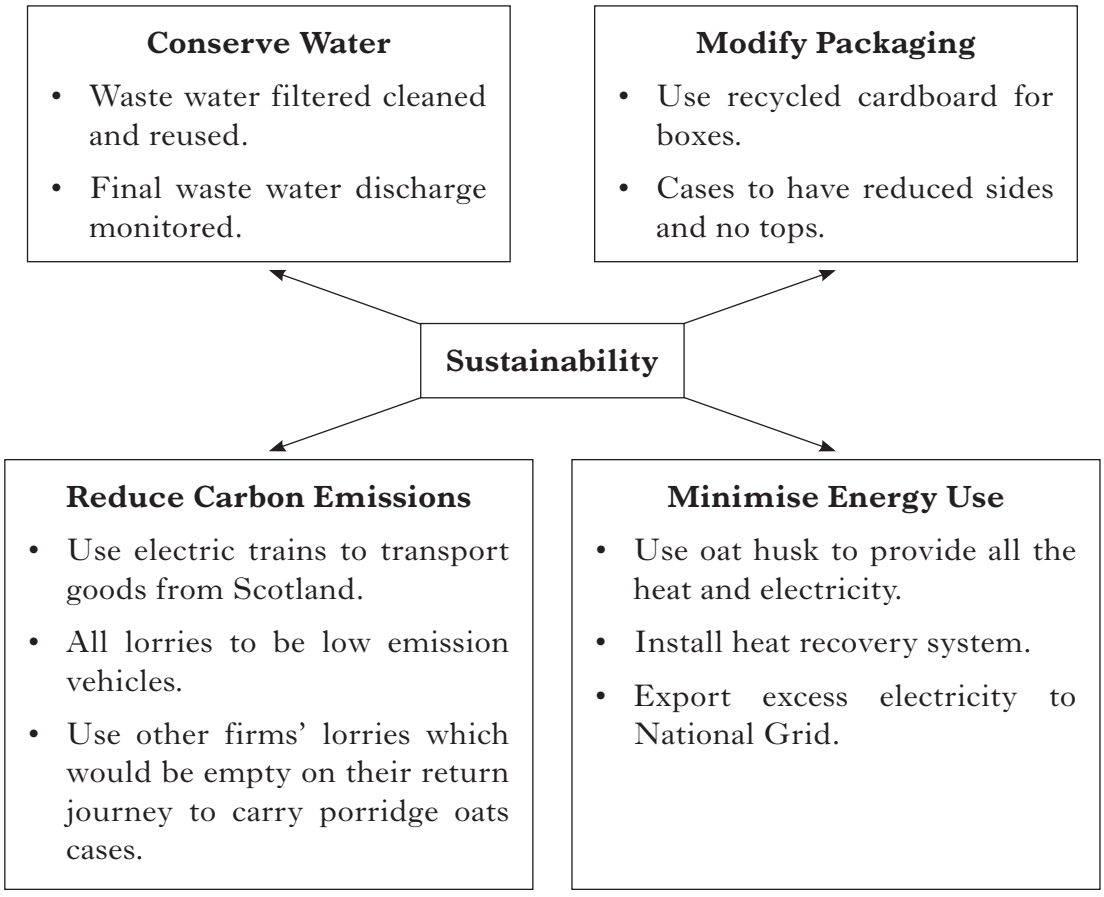
(iii) give **one** example of recycling.

_____ **1**

Marks

7. (continued)

(*b*) Management at the mill has decided to make porridge oat production more sustainable. Its four point sustainability plan is shown below.



(i) Give **one** way in which packaging is reduced.

_____ **1**

(ii) Give **two** financial benefits of using the husks to power the mill.

1 _____

2 _____ **2**

(iii) Give **one** example of cooperation in the plan between firms to cut down carbon emissions.

_____

_____ **1**

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

7. (*b*) (continued)

(iv) Are oat husks renewable or non-renewable?

Underline your answer and give a reason.

Renewable / non-renewable

Reason _____ **1**

(v) Explain why it is good practice to monitor the waste water discharge.

_____

_____ **2**

(*c*) (i) Suggest **one** way Scottish farmers could contribute to sustainability at the mill.

_____ **1**

(ii) Give **one** way in which low emission vehicles have been adapted to reduce their effect on the environment.

_____ **1**

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8. Use the map extract of the Glasgow area – Extract No 2008/64 (**separate item**) to answer the following questions.

Marks

(*a*) The map extract shows different urban environments.

Complete the table using the information below.

5666 5763 industry park football stadium

Land use	*Grid reference*
museum & art gallery	
	5564
residential	
	5862
	6665

3

(*b*) The site of a settlement is influenced by a variety of natural features.

Underline one of the features below, which may have influenced the site of Glasgow (GR 5965).

Features: *bridging point* *natural route centre* *sheltered port*

Use evidence from the map to explain your answer.

_____

_____ **1**

(*c*) Give **one** piece of map evidence which shows historical settlement in this area.

_____ **1**

(*d*) Before 2011 most traffic approaching Glasgow from the east used the M8 through the city and crossed over the River Clyde by the Kingston Bridge. The table below gives the traffic figures for three specific years.

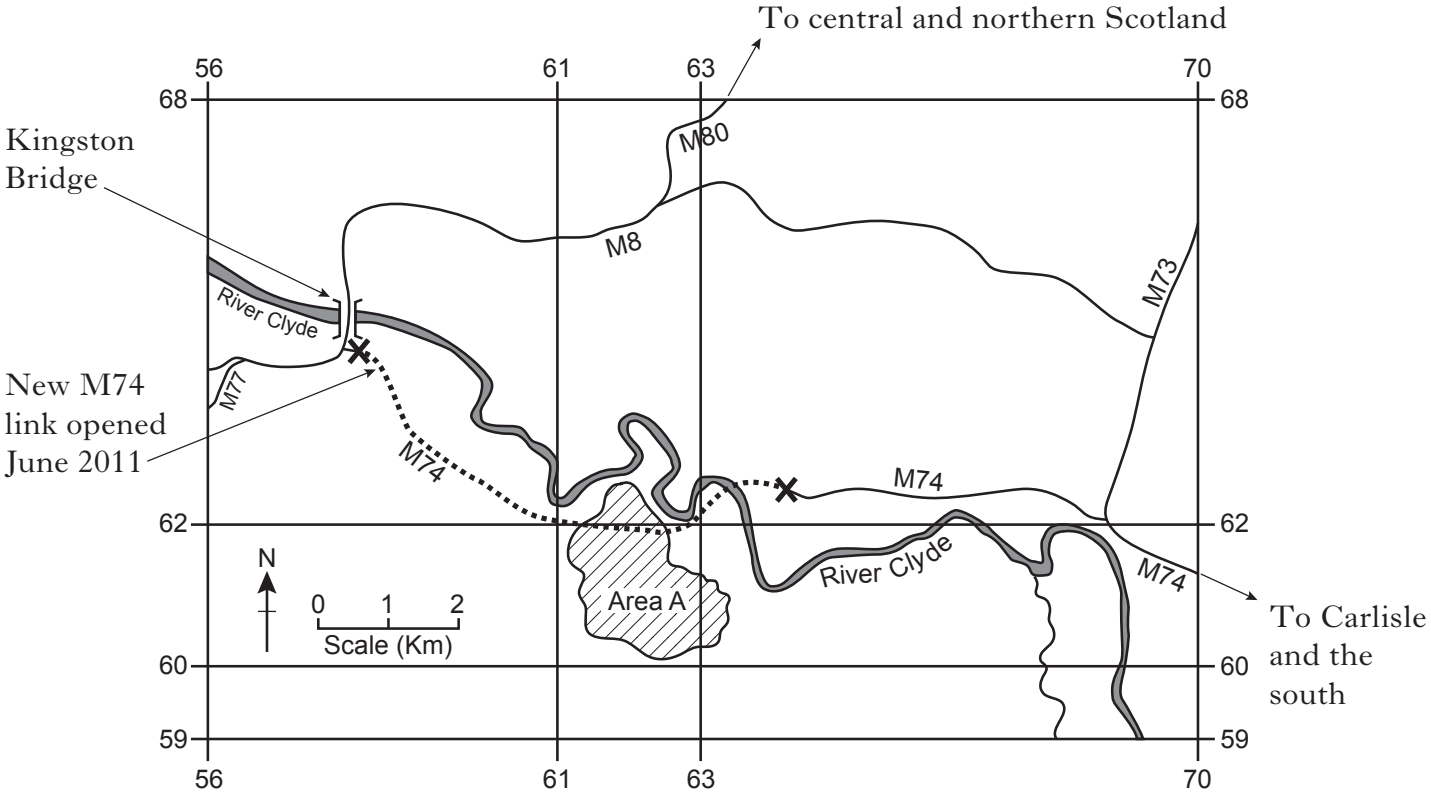
Traffic figures on the Kingston Bridge	
Vehicles per day	*Year*
31 000	1970
155 000	2003
186 000	2010

Express as a ratio, in its simplest terms, the number of vehicles in 1970 to that in 2010.

1970 _____ : _____ 2010 **1**

8. (continued)

(*e*) The sketch map below shows the recently opened M74 link on the south side of the River Clyde.



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(i) Give **one** advantage to the residents in Area A of the M74 link.

Advantage _____ **1**

(ii) In the planning process for the M74 link, different groups put forward their own views.

Describe a possible conflict of interest between **two** named groups for this planned link.

Group 1 _____ Group 2 _____ **1**

Possible conflict

_____

_____ **1**

Marks

8. (continued)

(*f*) Give **two** ways cities like Glasgow can reduce car use.

1 _____

2 _____ **2**

(*g*) A new business park is to be built on a site at GR 635625.

(i) Give **one** natural resource of this site.

_____ **1**

(ii) Suggest **two** other reasons for building at this location.

1 _____

2 _____ **2**

(*h*) Part of the Clyde Walkway (GR 625630) is shown on the map extract.

Give **two** examples of existing transport routes used by the Clyde Walkway.

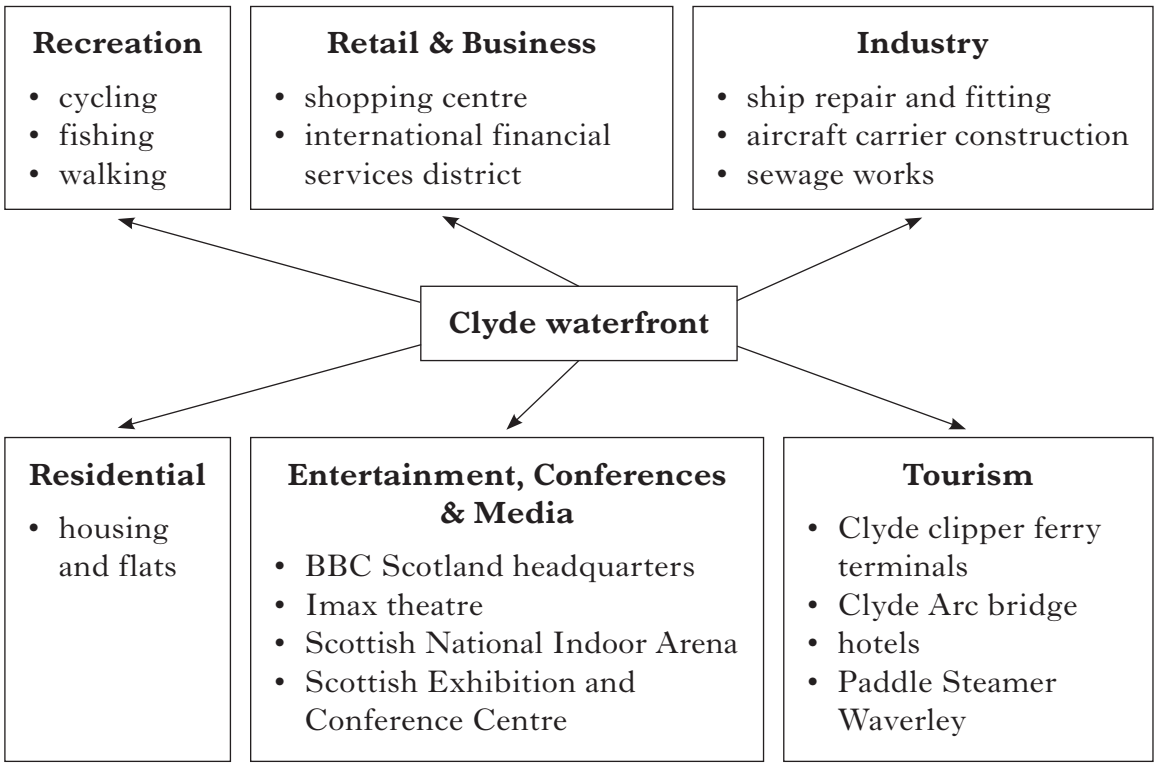
1 _____

2 _____ **2**

[Turn over

8. (continued) *Marks*

(*i*) The diagram below shows some of the user groups on the Clyde waterfront.



(i) Using map evidence, identify **two** tourist attractions found on the Clyde waterfront.

1 _____ GR _____

2 _____ GR _____ **1**

(ii) Choose **one** of the user groups and give **two** ways in which this group benefits the local economy.

User group _____

Benefit 1 _____

Benefit 2 _____ **1**

(iii) The diagram illustrates multi-use and integration along the Clyde waterfront. Describe **one** other example of multi-use integration in your own area.

_____

_____

_____ **2**

8. (continued)

(*j*) Glasgow will host the Commonwealth Games in 2014. Organisers of the games are using the slogan "**Go for Green**" to reduce environmental damage.

Commonwealth Games Athletes' Village

Eco friendly buildings to reduce energy loss.

GLASGOW 2014
XX COMMONWEALTH GAMES

Sir Chris Hoy Velodrome (part of Emirates Arena)

Rainwater captured off the roof, filtered and returned to the River Clyde.

Hampden Park

Converting existing stadium to include an athletics track.

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(i) Give **one** environmental advantage of converting an existing stadium to include an athletics track.

_____ **1**

(ii) Suggest **one** use for the Athletes' Village after the games.

_____ **1**

(iii) Suggest how the local population could be encouraged to use these facilities after the games.

_____ **1**

[Turn over

Marks

8. (continued)

(*k*) (i) State **two** ways you could personally reduce the use of water in your home.

1 _____

2 _____ **1**

(ii) Give **two** ways you could reduce the use of energy in your home.

1 _____

2 _____ **1**

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SECTION 2

Answer only ONE question—Option A or B or C.

Write your answers on the pages which follow.
Diagrams may be used where appropriate.

Option A

Describe energy production and use in:

(*a*) Western Europe other than the UK; **5**

(*b*) an economically less developed country (ELDC). **5**

(10)

OR

Option B

Describe:

(*a*) an international pollution example you have studied; **5**

(*b*) the role of indicator species in pollution. **5**

(10)

OR

Option C

Describe:

(*a*) techniques used to gather information from tourists in an area you have studied; **5**

(*b*) conflict situations caused by tourism and their resolution. **5**

(10)

[*END OF QUESTION PAPER*]

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SPACE FOR ANSWERS

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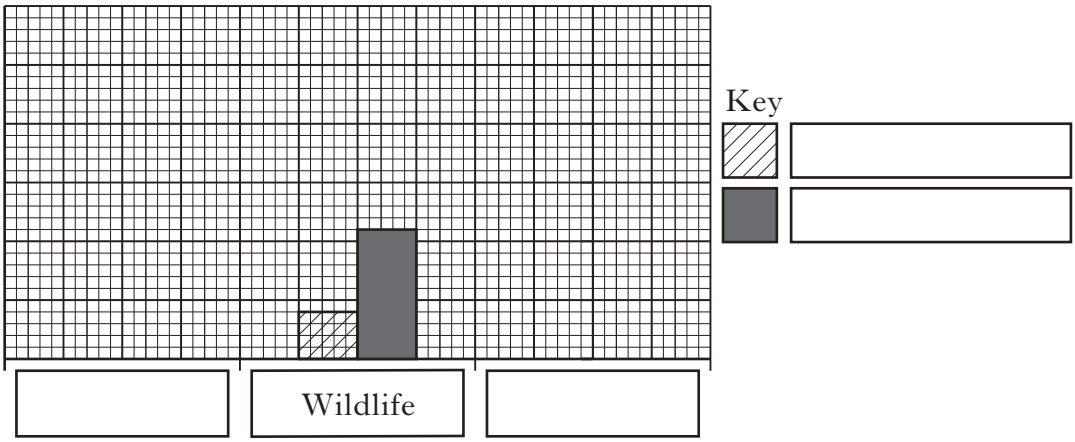
SPACE FOR ANSWERS

ADDITIONAL GRAPH FOR QUESTION 5(*a*)(i)



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ACKNOWLEDGEMENTS

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