Specimen Papers and Mark Schemes for Geography

For first AS Examination in 2009
For first A2 Examination in 2010
Subject Code: 3910
## Contents

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**Mark Schemes**

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Specimen Papers
ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2009

Geography
Assessment Unit AS 1
assessing
Physical Geography
SPECIMEN PAPER

TIME
1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES
Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Section A: candidates must answer this section.
Section B: answer all three questions in this section, you should write your answers in the spaces provided in this question paper.
Section C: answer any two questions from this section. Write your answers to Section C on the lined paper at the end of this booklet.

INFORMATION TO CANDIDATES
The total mark for this paper is 90.
Quality of written communication will be assessed in all questions.
Figures in brackets printed down the right hand side of pages indicate the marks awarded to each question or part question.
Section A

Submitted fieldwork report and table of data.

At the end of the examination these should be attached securely to this paper using the treasury tag supplied.

1 (a) Outline one specific hazard related to your fieldwork and discuss two strategies which you planned to minimise this risk in the field.
(b) Complete the diagram below by filling in **three** further stages in your investigation, which allowed you to reach a geographical conclusion.

![Diagram](image)

(c) (i) What is the purpose of conducting statistical analysis as part of the investigation process?

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[3]

(ii) Select one of the following statistical techniques which could be used to analyse some or all of the data in your table. The chosen technique must be relevant to the aim of your field study.

- A Measure of Central Tendency **and** Dispersion (Mean or Median **and** Range)
- Spearman’s Rank Correlation
- Nearest Neighbour Analysis

Chosen Technique: ___________________________________________ [no mark]

In the box provided on page 6, apply this statistic to your data and, if relevant, explain the statistical significance of the outcome. (Significance graphs and formulae are provided – **Resources 1A and 1B**, pages 9 and 10.)
(iii) What geographical interpretation can be drawn from this statistical analysis with reference to your aim or hypothesis?

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[6]
(d) Describe one way in which your data collection methods could be improved or modified and explain how this improvement or modification could improve the accuracy of your data.

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(e) Outline one way in which your investigation could be extended and explain how this may further improve your geographical understanding.

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Reminder: When you have finished the examination attach your fieldwork report and table of data to this paper using the treasury tag supplied.
Formula:

\[ r_s = 1 - \frac{6 \Sigma d^2}{n^3 - n} \]

where \( d \) = the difference in rank of the values of each matched pair  
\( n \) = the number of ranked pairs  
\( \Sigma \) = the sum of

Spearman’s Rank Correlation Significance Graph and Table

Critical values for \( r_s \)

Degrees of freedom \([\text{Number of ranked pairs (}n\text{)} - 2]\)

Critical values of Spearman’s Rank Correlation Coefficient, \( r_s \)

<table>
<thead>
<tr>
<th>Significance level</th>
<th>degrees of freedom</th>
<th>0.05 (5%)</th>
<th>0.01 (1%)</th>
</tr>
</thead>
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<tr>
<td>4</td>
<td>0.88</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.83</td>
<td>0.96</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.80</td>
<td>0.91</td>
<td></td>
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<tr>
<td>7</td>
<td>0.77</td>
<td>0.87</td>
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<td>0.72</td>
<td>0.84</td>
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<td>9</td>
<td>0.68</td>
<td>0.80</td>
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<td>11</td>
<td>0.60</td>
<td>0.74</td>
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<td>0.71</td>
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<td>15</td>
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<td>40</td>
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<tr>
<td>50</td>
<td>0.31</td>
<td>0.38</td>
<td></td>
</tr>
</tbody>
</table>
Resource 1B

Formula:

\[ R_n = 2 \bar{d} \sqrt{\frac{n}{A}} \]

where \( \bar{d} \) = the mean distance between nearest neighbours
\( n \) = number of points
\( A \) = area in question

Nearest Neighbour Index Significance Graph
2 (a) Study Resource 2A which illustrates a delta.

Name the type of delta shown in Resource 2A and explain the processes involved in its formation.

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[4]
(b) Study Resource 2B showing a storm hydrograph

Resource 2B

(i) State the values of the lag time and peak discharge for the storm event shown.

Lag time ____________________________________________

Peak discharge _____________________________________  [2]
(ii) Explain the effects of **either** deforestation or urbanisation on a storm hydrograph.
(a) **Resource 3** shows the outline of a soil profile of a mollisol/chernozem.

**Resource 3**

(i) Annotate the profile to show **four** characteristics of this soil type. [4]

(ii) Describe **two** ways in which **monoculture** of mid-latitude grasslands affects the soil.

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________________________________________________________________________ [4]
(b) Explain how **one** physical characteristic of a local ecosystem you have studied influences the biotic components of the ecosystem.
(a) Name two air masses involved in the formation of frontal depressions in mid-latitudes and describe their main characteristics by completing the table below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Characteristics</th>
<th>Air Mass 1</th>
<th>Air Mass 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
(b) Study Resource 4 which shows mean January temperatures in °C for the North Atlantic area.

**Resource 4**

(i) Using Resource 4, describe the pattern of temperatures shown.

(ii) Identify and explain one factor influencing this temperature pattern.
Section C

Answer any two questions in this section.

5. “Flooding may have both benefits and harmful effects for people.” Discuss this statement with reference to your case study of a large-scale drainage basin or its delta. [12]

6. Describe and explain one vegetation succession, with reference to your case study at a small/regional scale. [12]

7. With reference to your case study of a hurricane, describe and explain the extent of its impact on people and property. [12]
Geography

Assessment Unit AS 2

assessing

Human Geography

SPECIMEN PAPER

TIME

1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Section A: candidates must answer this section.
Section B: answer all three questions in this section, you should write your answers in the spaces provided in this question paper.
Section C: answer any two questions from this section.

INFORMATION TO CANDIDATES

The total mark for this paper is 90.
Quality of written communication will be assessed in all questions.
Figures in brackets printed down the right hand side of pages indicate the marks awarded to each question or part question.
Section A

1 (a) A geographer conducting an ecological study in an upland environment in the Sperrin Mountains, County Tyrone (see Resource 1A) devised the following hypothesis:

“The vegetation cover in this upland ecosystem is dominated by Calluna vulgaris (Common Heather)”

(i) Name the instrument shown in Resource 1B which was used for data collection and explain why it would have been suitable for this study.

(ii) Random sampling was used to collect the data. Explain how this may have been carried out and why it may have been selected as the most appropriate method.
(b) Study **Resource 1C**, which is a satellite image of Manchester and its surrounding environment.
(i) Describe how the dominant landuse in grid square B2 differs from that in C1.

(ii) Using evidence from the satellite image, outline and explain one factor which may have influenced the urban growth of Manchester.

(iii) Geographers can use satellite images to map urban growth. Outline three other practical uses of satellite images (remotely sensed imagery).
(c) A geographer studying pebble shape at five sites along the course of a river, randomly sampled 50 pebbles at each site and assessed their shape using Power’s Scale, Resource 1D. Study Resource 1E which shows the results of the investigation.

Resource 1D

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>Class 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very angular</td>
<td>Angular</td>
<td>Sub-angular</td>
<td>Sub-rounded</td>
<td>Rounded</td>
<td>Well rounded</td>
</tr>
</tbody>
</table>

Resource 1E

![Bar chart showing the number of pebbles in each class at each site.](chart.png)
(i) State one possible difficulty of classifying rock shape using Power’s Scale, **Resource 1D**.

(ii) Which site on **Resource 1E** has the largest number of **angular** (**Class 2**) pebbles?

(iii) What **percentage** of pebbles at site 3 on **Resource 1E** is classified as **very angular**?

(iv) Using **Resource 1E**, describe and explain how the distribution of pebbles classified as **sub-rounded** and **rounded** changes with distance downstream.
Section B

Answer all three questions in this section.

2  (a)  Study Resource 2 showing a population pyramid for outer London and one for inner London.

Describe and explain one difference in population structure between the two pyramids.

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___________________________________________________________________________ [6]
(b) MEDCs are experiencing an ageing population. Discuss **one** economic and **one** political implication of this ageing population.
3  (a) Study **Resource 3** relating to contrasts between the rural-urban fringe and England as a whole.

**Resource 3**


<table>
<thead>
<tr>
<th>Area</th>
<th>Population Growth (Percentage increase)</th>
<th>Increase in jobs (Percentage increase)</th>
<th>Traffic (Percentage increase*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural-Urban Fringe</td>
<td>6.9</td>
<td>8.1</td>
<td>75</td>
</tr>
<tr>
<td>England</td>
<td>3.0</td>
<td>3.7</td>
<td>43</td>
</tr>
</tbody>
</table>

*Source: compiled from data published by the Countryside Commission and National Statistics online*

*figure relates to 1981-1997*

Explain how suburbanisation has brought about these changes in the rural-urban fringe.

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(b) Describe **two** problems associated with service provision in remote rural areas.

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__________________________________________________________________________________ [4]

(c) Distinguish between a National Park and an AONB.

__________________________________________________________________________________

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__________________________________________________________________________________ [2]
4  **(a)** Identify and describe the operation of any one composite measure of development.

                                                                                          [3]

**(b)** Distinguish between colonialism and neo-colonialism (dependency).

                                                                                          [3]
(c) Study **Resource 4** which shows child mortality and educational attainment of mothers in selected LEDCs.

**Resource 4**

Describe and explain the relationship between educational attainment of mothers and child mortality.
Section C

Answer any two questions.

5 With reference to a national case study, describe and explain the relationship between population distribution and resources. [12]

6 With reference to a case study of a LEDC city, discuss how service provision and economic activity have been affected by rapid urbanisation. [12]

7 With reference to a national case study, describe and explain the regional variations in development. [12]
TIME

1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Section A: answer two questions.
Answer one question from each of the two optional units you have studied.

Section B: answer one question from this section

INFORMATION FOR CANDIDATES

The total mark for this paper is 90.
Quality of written communication will be assessed in all questions.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
You are strongly recommended to read through and consider the questions before choosing those you are going to answer.

This paper is accompanied by a Resource Booklet.
Section A

Option A: Impact of Population Change

1 (a) With reference to natural population change, explain what is meant by the epidemiological transition. [4]

(b) Study Resource 1 (page 54 of the Resource Booklet) on the “White Australia” policy, Australia’s migration policy of the early 20th century.

(i) Discuss the possible considerations that may have led to this policy. [6]

(ii) The policy was controversial and was abandoned. Why do you think this was so? [5]

(c) With reference to your case study material, explain how one national fertility policy attempted to achieve a balance between resources and population. [15]

2 (a) Study Resources 2A and 2B (page 55 of the Resource Booklet) which detail natural population change in the UK and other European countries.

(i) Resource 2A displays Total Fertility Rate. Name another measure of fertility and explain how it operates. [3]

(ii) The resources demonstrate an ageing population. What factors have influenced natural population change in Europe to bring about this trend? [7]

(b) Evaluate the contribution economic migrants have made to their host countries in recent years. [5]

(c) With reference to your small-scale case studies of both out-migration and in-migration, discuss the positive and negative implications of migration. [15]
Option B: Planning for Sustainable Settlements

3 (a) With reference to urban ecological or carbon footprints:
   (i) explain how such a footprint may be measured;  [4]
   (ii) show how it can be used to demonstrate that some urban areas are less sustainable than others. [3]

(b) Study Resources 3A-3C (pages 56-57 of the Resource Booklet) which detail transport strategies in Portland, Oregon, USA. In what way are these strategies related to the principles of sustainable development? [8]

(c) With reference to your case study of a city, evaluate the success of its traffic management strategies in alleviating the problems caused by traffic and transport. [15]

4 (a) Explain the social, economic and environmental considerations that have given rise to the promotion of sustainable development. [6]

(b) Study Resource 4 (page 58 of the Resource Booklet) which puts forward a model called the ‘social city’. Evaluate the effectiveness of this proposal in terms of its sustainability. [9]

(c) With reference to your small-scale case study, describe and explain the impact of Local Agenda 21 on its planning. [15]
Option C: Issues in Ethnic Diversity

5  (a) Study Resource 5 (page 59 of the Resource Booklet) relating to ethnic identity.

   (i) ‘In terms of defining ethnicity, perceived ethnic identity is often more important than any other primary factor.’ Use the Resources to help you evaluate the validity of this statement. [8]

   (ii) Resource 5 claims that most of the Pakistani and English people living in Scotland are to be found in Glasgow. How would values of the Location Quotient verify this claim? [3]

(b) Explain how multi-culturalism can maintain ethnic diversity. [4]

(c) With reference to your national case study of ethnic conflict discuss the causes of, and the outcomes and responses to, the conflict. [15]

6  (a) Study Resource 6 (page 60 of the Resource Booklet) relating to ethnic groups in the United Kingdom.

   (i) “Ethnic diversity has had a positive impact on the United Kingdom.” Use Resource 6 to help you evaluate this statement. [8]

   (ii) What statistical technique would be used to verify the statistical significance of the difference in full time educational attendance between the Indian and White populations? Explain your choice. [3]

(b) Explain how territorial disputes can be a cause of ethnic conflict in plural societies. [4]

(c) With reference to your urban case study, discuss the processes which have maintained its ethnic diversity and their consequences. [15]
Section B

Global Issues

Answer one question from this section

7  (a) Describe how human activities have given rise to any one of the following primary gaseous pollutants:
   • methane
   • sulphur dioxide
   [4]

   (b) With reference to your primary data collection, state your aim(s) and explain how the results helped your understanding of air pollution.
   [6]

   (c) With reference to your case study, describe the causes of air pollution, its environmental and health impacts and evaluate its management.
   [20]

8  (a) Discuss one way in which nuclear energy can be said to benefit humanity.
   [4]

   (b) With reference to your primary data collection, state your aim(s) and explain how the results helped your understanding of nuclear energy.
   [6]

   (c) “We should not rely on nuclear energy because of the inevitable pollution risks, both actual and potential.”

   Evaluate the evidence that can be presented in support of this statement.
   [20]

9  (a) Outline the potential beneficial impacts of “GM crops”.
   [4]

   (b) With reference to your primary data collection, state your aim(s) and explain how the results helped your understanding of agricultural change.
   [6]

   (c) With reference to your regional case study, discuss the environmental consequences of agricultural change and how these may be managed.
   [20]

10 (a) With reference to an example, briefly explain one of the following terms, in relation to tourism change and management.

   • carrying capacity;
   • social sustainability
   [4]

   (b) With reference to your primary data collection, state your aim(s) and explain how the results helped your understanding of tourism and its management.
   [6]

   (c) “Ecotourism destroys what it sets out to conserve.”

   To what extent do you agree with this statement? Justify your viewpoint.
   [20]
Resource 1

A Commentary

Immigration and National Identity

For over two centuries immigration (to Australia) has raised questions about national identity.

- What kind of society do we want?
- Is Australia a southern outpost of British Culture? Or is its identity bound to Asia and the Pacific?

B The Policy

Immigration Restriction Act of 1901

“Be it enacted by the King’s Most Excellent Majesty, the Senate and the House of Representatives of the Commonwealth of Australia as follows.

The immigration into the Commonwealth of the persons described in any of the following paragraphs of the section (hereinafter called ‘Prohibited Immigrants’) is prohibited”.

- The Act went on to prohibit the immigration of people who were insane, suffering from “loathsome diseases”, criminals, involved in prostitution, or who were contracted to work for wages lower than usual.
- Another category of prohibited immigrants contained people who had failed the “dictation test”.

“Any person who when asked to do so by an officer fails to write out at dictation and sign in the presence of the officer a passage of fifty words in length in any European language as directed by the officer”.

C Commentary

1901–1945: The Closed Door

The dictation test was intended to conceal the fact that Australia had a policy of outright racial discrimination, which would have been diplomatically unpopular. It aimed to stop non-European immigration in an indirect way: by refusing admission to those who failed to pass a test given in a foreign language.

Dictation tests were intentionally confusing, even when read in English. If an applicant did manage to pass the test in one language, it could be conducted again in another language until the applicant failed.

Source: Adapted from Immigration Museum Displays, Museum Victoria, Melbourne Australia
Resource 2A

Total Fertility Rate, UK, 1961–2001

Resource 2B

Pensioners Per 1000 Working Age People (15–64) in Selected European Countries, 2000–2050

**Resource 3A**

**Fareless Square**

All trips that begin and end within Fareless Square (see Resource 3B) are free – all day every day. Fareless Square includes most of downtown Portland (the Central Business District).

**Bikes on TriMet** (Portland’s subsidised public transport system)

All buses are equipped with easy-to-use bike racks (see Resource 3C) and your bike is always welcome aboard MAX (Portland’s light rail system). All you need is the usual bus and MAX fare – there is no additional charge to bring your bike.

Bike lockers with high security locks are available at some TriMet transit centres, MAX stations and Park & Rides.

**Work site shuttles**

TriMet, in partnership with transportation management associations and employers, provides shuttles that connect work sites with MAX and buses at transit centres and Park & Rides.

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**Resource 3B**

**Fareless Square, Portland**

![Fareless Square, Portland](http://www.trimet.org/farelessmap.htm)
Resource 3C

MAX arriving at the airport from the city centre

Bus from the city centre to the station. The bus has a bike rack at the front.

Car park at the edge of Fareless Square

City centre street at 09.30
Resource 4

The Social City Region

ISBN-0582327725
Resource 5

Ethnic Identity

In Search of an Identity

Pakistani immigrants feel more at home in Scotland than the English that live there. Research into why Pakistanis, the largest non-white ethnic minority group in Scotland, find it easier to adapt to Scottish culture than the neighbouring English reveals that it is all down to English notions of identity. The research showed that English perceptions of identity were primarily influenced by birthplace but Pakistanis defined themselves by religion.

This same study found that almost half of English people living in Scotland felt that to be truly Scottish it was essential to be born in Scotland but less than a quarter of Pakistanis believed that birthplace mattered. Current estimates suggest there are 400,000 English and 21,000 Pakistanis living in Scotland. The majority of both groups are concentrated in Glasgow. Whilst English people are more sympathetic than Pakistanis towards Scottish symbols or towards the teaching of Scottish history in schools, such attitudes did not make them more comfortable living among Scots.

According to Professor Miller, one of the authors of the research, English people in Scotland have a more rigid, territorial identity than people in the Scottish Pakistani community. As the Pakistani community base their identity on religion they do not struggle to choose allegiance between two territories. “Their identity is portable. Being Muslim first and Scottish second does not conflict”, said Professor Miller. While religion was the main influence behind Pakistani identity, with 60% of participants saying they were Muslim rather than Pakistani, British or Scottish, only 2% of English chose a religious identity. Nearly 60% saw themselves as British as opposed to English, Scottish, Catholic or Protestant.

© Adapted from an article in The Independent by Paul Kelbie, 30 October 2003
6.5% of the total British population is from ethnic minorities – approximately 3.7 million.
6% of solicitors and 8% of barristers in 1997 were from ethnic minorities.
Approximately 41% of Bangladeshis are under 16.
Almost 2.5 million of people of working age belong to ethnic minorities.
Black Britons contribute £5 billion to the UK economy annually.
70% of people of Caribbean/African origin send a total of £500 million a year to support family members abroad.
80% of Asians in the UK own their own homes.
50% of registered homeless within London are from ethnic minorities.
Over 1 in 10 of minority ethnic people that are victims of crime consider the crime to have been racially motivated.
The McPherson report on the murder of a black youth made 70 recommendations concerning the police and their dealings with minority ethnic communities.
30% of Indians and 20% of Pakistanis speak English as their first language.
85% of women from Bangladesh and 79% of Pakistani women always dress in traditional clothes.
91% of Indian 16-year-olds are in full time education compared with 67% of white 16-year-olds.
TIME

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES

Section A: answer two questions.
Answer one question from each of the two optional units you have studied.

Section B: answer all this section

INFORMATION FOR CANDIDATES

The total mark for this paper is 110.
Quality of written communication will be assessed in all questions.
You should answer two questions in Section A, one from each of the two optional units you have studied.
You are strongly recommended to spend one hour answering Section A of this assessment unit.
Section B is a decision making exercise. You should spend at least 30 minutes reading the questions and selecting appropriate information before attempting to write your answers.
You are provided with a Resource Booklet and an OS map for use with this paper.
Section A

Option A: Fluvial and Coastal Environments

1  (a) Describe the impact of energy production demands on river and valley zones.  
    (b) Study Resource 1 (page 68 of the Resource Booklet) which shows the impact of channelisation on river channels and habitats.  
        (i) For any two of the four impacts on the river channel, describe how they could negatively affect habitats.  
        (ii) Explain why the development of an environmentally sensitive engineering scheme may represent a challenge to river engineers.  
    (c) With reference to a regional case study, describe the nature of the hard and soft engineering strategies used to protect coastal areas and evaluate the impact of these strategies on the human and physical environment.  

2  (a) Why are coasts under increasing pressure from human activity?  
    (b) Suggest how the attitude to coastal protection may differ between the situations shown in Resources 2A and 2B (pages 69-70 of the Resource Booklet).  
    (c) With the aid of a diagram, describe and explain the processes which lead to the formation of either:  
        a depositional coastal landform;  
        or  
        an erosional coastal landform.  
    (d) With reference to a regional case study of a river basin, discuss the conflicts of interest arising from its management and explain how these reflect interdependence between places.
Option B: Nature and Sustainability of Tropical Ecosystems

3 (a) Study Resource 3A (page 71 of the Resource Booklet) which shows the distribution of tropical biomes and the changing location of the ITCZ in Africa.

Use these resources to help you describe and explain the distribution of the tropical forest and tropical grassland biomes with reference to the seasonal changes in atmospheric processes. [10]

(b) Study Resource 3B (page 72 of the Resource Booklet) which is an account of the global issue of salinisation.

(i) With the aid of Resource 3B, discuss the causes of salinisation. [5]

(ii) With reference to your own regional case study material and Resource 3B, assess the impacts of salinisation on both the environment and people. [15]

4 (a) Briefly describe and explain the following characteristics of an oxisol (litosol):

- pH
- colour
- depth [6]

(b) Study Resource 4 (page 73 of the Resource Booklet) which shows the nutrient cycle of a tropical forest biome under natural conditions (A) and plantation agriculture (B).

Describe and explain the changes in the stores and flows of nutrients caused by the introduction of the plantation system. [9]

(c) With reference to a small scale case study from a tropical rainforest, explain why sustainable development is an important issue in this environment and evaluate the attempts to achieve it. [15]
Option C: The Dynamic Earth

5  (a) Explain how an earthquake may cause a tsunami.  

(b) Study Resource 5 (page 74 of the Resource Booklet) which shows earthquake and volcanic activity in the north-west Pacific. With the aid of a cross sectional diagram, explain how these patterns of activity occur at this plate boundary.  

(c) “The prediction of volcanic activity is a failed science”. Assess the validity of this statement with reference to a small scale case study.  

6  (a) Study Resources 6A-6C (page 75 of the Resource Booklet) relating to volcanic eruptions. Identify any two of the environmental hazards shown and discuss how they may cause loss of life and damage to property.  

(b) With the aid of an annotated diagram, explain the formation of an ocean ridge.  

(c) With reference to case study material from a MEDC and a LEDC, contrast how knowledge, perception and stage of development have affected the management of earthquake activity.
Section B

Decision Making Exercise

7 Background To The Report

The Corrib natural gas field, discovered in 1996, lies in the Atlantic Ocean, 83 kilometres off the west coast of Ireland (Resource C). Enterprise Oil, the company which developed the gas field, has been taken over by Shell, a British-based multinational corporation. The gas flow is going to be about 1.7 million cubic metres each year and is expected to last for between 15 and 20 years.

The company proposes that the gas will be brought ashore on the north coast of County Mayo, Republic of Ireland, in the region of Erris (Resource C). It will then be taken 24 kilometres to a €150 million (£100 million) gas terminal to be treated and cleaned before it can be piped further. (Note: € is the symbol for euro, the currency used in the Republic of Ireland.)

The history of the project after the discovery of the gas field was:

- **November 2000**  Enterprise Oil applied for permission to build a gas terminal
- **April 2001**  Mayo County Council gave support for a gas terminal, subject to conditions being met
- **April 2003**  Planning Permission refused by An Bord Pleanála (the Planning Board of the Republic of Ireland)
- **April 2004**  Revised plan by Mayo County Council

You must take the role of a Planner for An Bord Pleanála to consider the revised plan as described in the Resources and make a decision as to whether the Corrib Natural Gas Project should be permitted to proceed.

You must base your report only on material contained within this examination paper regardless of any actual decision which may have been made.
<table>
<thead>
<tr>
<th>Marks</th>
</tr>
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<tbody>
<tr>
<td>Format</td>
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<tr>
<td>Role</td>
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<tr>
<td>Graph</td>
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</table>

<table>
<thead>
<tr>
<th>The Report Must Be Structured As Below</th>
<th>Marks</th>
<th>Guidance To Candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heading</strong></td>
<td><strong>Sub-heading</strong></td>
<td><strong>Sub-section</strong></td>
</tr>
<tr>
<td>A Introduction</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>B The likely impact of the Corrib Natural Gas Project on:</td>
<td>(i) the local environment;</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>(ii) the local economy;</td>
<td>10</td>
</tr>
<tr>
<td>C Decision</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Geography

Assessment Unit A2 2

Specimen Resource Booklet
THE IMPACT OF CHANNELISATION ON RIVER CHANNELS AND HABITATS

Resource 1

BEFORE CHANNELISATION

A

Overhanging vegetation provides shade

B

Sorted gravels provide diverse habitats

C

Bankfull discharge

D

Low flow

Mature tree and shrub growth

AFTER CHANNELISATION

A

Loss of overhanging vegetation

B

Unsorted gravels

C

Bankfull discharge

D

Low flow

Mature tree and shrub growth

Source: Adapted from Soil and Environment, J.G. Cruickshank, D.A.N.I., 1997
Resource 2A

Coastal protection at Quily, Co Clare
Resource 2B

Collapsed Sea Wall At Corton, East Anglia

© Landform Slides (2001)
The ITCZ – Inter-Tropical Convergence Zone is where the surface trade winds meet and is marked by large scale convection and associated rainfall.

The distribution of tropical forest and tropical grassland biomes in Africa
Is History Repeating Itself?

Historians now agree that the decline of several of the world’s oldest civilisations was, at least in part, the result of salinisation of their irrigated farmland. Mineral salts occur naturally in the rain, rivers and groundwater as well as being bound up with soil particles. They include chlorides, sulphates and carbonates of sodium, calcium, magnesium and potassium. Even good-quality water has salt concentrations between 200-500 parts per million (ppm) and it is commonly used in irrigation of farmland. If a farmer applies 10 000 tonnes of irrigation water to a hectare of cropland annually then between two and five tonnes of salts will be added to the soil. Unless these are flushed out, enormous quantities can build up over the years.

Worldwide, one in five hectares of irrigated farmland suffers from build-up of salts in the soil. Soil salinisation costs the world’s farmers an estimated £7 billion a year in reduced income, and the figure is growing. Spreading at a rate of up to two billion hectares a year, salinity is offsetting a significant proportion of the increased productivity achieved by expanding irrigation. Salt may well present as great a risk to modern society as it did to the ancients.
(A) Natural Conditions

Biomass

- Uptake by plants
- Tissues die
- Input dissolved in rainfall
- Released as litter decomposes
- Loss by leaching
- Loss in run-off

S - Soil  L - Litter

(B) Plantation Agriculture

Biomass

- HARVESTING & WEEDING
- FERTILIZER

L - Litter
Resource 5

Volcanic and Earthquake Activity along the Boundary of the Pacific and Eurasian Plates North Of Japan
Resource 6A


Resource 6B


Resource 6C

Section B: Decision Making

Checklist of Resource Material

Resource A: 1:50 000 OS map of Mayo
Resource B: Background to the project (with Table A and Graph A)
Resource C: Map showing location of Corrib Gas Field
Resource D: Map showing site of terminal and area for depositing peat extracted from the site.
Resource E: E1 – Photograph of Sruwaddacon Bay
          E2 – Photograph of Carrowmore Lake
          E3 – Pictorial overview of the Corrib Development
Resource F: Resources against the proposed development (with Table B)
Resource G: Resources in favour of the proposed development
Resource H: Quotations related to the development

Candidates are recommended to spend 30 minutes reading the resources and selecting appropriate information before attempting to write their answers.
Resource B

Background to the Project

The Corrib natural gas field, 83 km off the coast of Mayo, will have a number of wells drilled into it. The gas will be collected by equipment placed on the seabed. The gas is then to be transported by pipeline, coming ashore at Dooncarton in Broadhaven Bay (Grid Reference: 8038) and travelling inland to Bellanaboy terminal. In the terminal the gas will be treated to remove impurities before it is distributed by pipeline to the rest of Ireland and beyond.

At the pipeline landfall (where the undersea pipeline reaches the shore), a trench will be dug in the seabed from high tide level to about 10 metres below low tide level. The pipeline will run along this trench and be connected to the onshore pipeline leading to the gas terminal. Another pipeline will run alongside this to return waste from the terminal for disposal at sea.

The proposed terminal will be located in north-west County Mayo, 18 kilometres east of the town of Belmullet. The 165 hectare site at Bellanaboy (GR: 8532 and 8632) is partially wooded and was used by the Irish government between the 1950s and the 1970s to experiment with grass production on peat bogs. The lands to the east, south-east and north-east are planted with conifers. The site is adjacent to the R314 regional road which links Belmullet to Ballina. The area in which it is sited comprises coastal scenery, blanket bog and lakes. There are many scattered small farms in the area and much of the landscape is of natural heritage value. In the region there are a number of designated areas including Carrowmore Lake (GR: 8429), a candidate Special Area of Conservation (cSAC); Pollatomish Bog (GR: 8336) a proposed Natural Heritage Area (pNHA); and Broadhaven Bay (GR: 7739), a proposed NHA and Special Protection Area (SPA) (Resource A). The site itself is made up of blanket bogland, wet grassland and coniferous plantations.

The developed site will consist of 15 hectare of buildings including warehouses, offices and the gas terminal itself, access roads and car parking spaces. As peat is an unsuitable material on which to build, 600 000 cubic metres of it has been removed, and will be replaced with a more stable fill. The removed peat was taken by road to Srahmore (GR: 8423) where it was deposited within a number of containment areas, secured by 3-4 metre high walls. A complex series of drainage ditches and settlement ponds will be constructed to stabilise the removed peat.

At the terminal there will be a 22 m high telecommunications mast, a 40 m flare tower to burn off excess gas, and a ground flare with a 12 m stack. Access to the site will be from the R314 via an improved forestry track and emergency access will be provided to the country road linking Pollatomish and the R314.

Relatively cheap and reliable sources of fuel are essential for any economy to flourish. The Department of the Environment in the Republic of Ireland argues that, as Ireland is relatively isolated from the main energy infrastructure in Europe, it is essential that Irish energy resources are exploited fully. Ireland has become more and more dependent on natural gas imports as the Kinsale gas field, off the south coast, has become depleted and as domestic demand has increased. Over 80% of Ireland’s gas is now imported, mostly from the UK (see Table A and Graph A).

Two gas pipelines link the Republic of Ireland to the UK. However, the UK itself is forecast to become a net gas importer in the near future.

As Ireland becomes more and more dependent on imports, the country becomes more vulnerable to price rises and shortages.
Table A

Changing Fuel Use in the Republic of Ireland 1990–2005

<table>
<thead>
<tr>
<th></th>
<th>% Oil</th>
<th>% Natural Gas</th>
<th>% Coal</th>
<th>% Peat</th>
<th>% Renewables</th>
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<tbody>
<tr>
<td>1990</td>
<td>45.6</td>
<td>18.5</td>
<td>20.6</td>
<td>13.6</td>
<td>1.7</td>
</tr>
<tr>
<td>2002</td>
<td>56.0</td>
<td>24.0</td>
<td>12.6</td>
<td>5.6</td>
<td>1.8</td>
</tr>
<tr>
<td>2005</td>
<td>58.8</td>
<td>22.1</td>
<td>11.7</td>
<td>4.9</td>
<td>2.5</td>
</tr>
</tbody>
</table>

© Data from Energy Statistics 1990-2005, Sustainable Energy Ireland

Graph A

Changing sources of natural gas used in Ireland

© Bord Gáis
Resource C

Map showing location of Corrib Gas Field
Resource D

Map showing site of terminal and area for depositing peat extracted from the site
Resource E1

Photograph of Sruwaddacon Bay

Resource E2

Photograph of Carrowmore Lake
Resource E3

Pictorial Overview of the Corrib Development
Resource F

Resources Against the Proposed Development

Many of the local residents close to the proposed pipeline and gas terminal have serious concerns about the project and its potential impact on the area.

The pipeline is due to make landfall at Dooncarton (GR: 8038). Brian Coyle, an engineer from the Erris area, has concerns over the stability of the pipeline in peat, with gas running through it at high pressure. The peat is already unstable in the area and a series of landslides on Dooncarton Hill occurred in October 2003, with the peat flows running within 60 metres of some houses. The soft peat of a blanket bog may not support a natural gas pipeline. Dermot Ahern, the Minister for Communications, Marine and Natural Resources, acknowledged in Parliament that there were no international codes for building pipelines in peat.

Erris Inshore Fishermen’s Association, representing local fishermen, also have concerns. They do not object to the development of the Corrib gas field but are concerned that the return pipe carrying effluent into Broadhaven Bay would discharge concentrated saline water, mercury and other heavy metals. This would have a negative impact on the crustaceans and flatfish in the bay. Several north Mayo coastal communities depend almost entirely on inshore fishing for their livelihoods. Patrick O’Donnell runs Porturlin Shellfish selling crabmeat labelled ‘from the clear unpolluted waters of the west coast of Ireland’. He says, ‘if there is future contamination to the shellfish, the fishery will eventually close down, affecting almost 90 people directly and their families.’ In 1998 the value of fish landed in the area was €870,000 (£580,000).

To prepare the construction site for the terminal 600,000 cubic metres of peat have been removed from the site and deposited at Srahmore (GR: 8423) on a sloping site of dug-over blanket bog. Little is understood about how very wet peat can be kept in place in a site such as Srahmore. Under certain circumstances peat can become fluid. As this region gets rainfall on average 200 days each year, the retaining walls may be unable to hold back the sodden peat. David Ball, an independent hydrogeologist, voiced concerns about securing, permanently, ‘over half a million tonnes of broken up peat on a peat slope above a main road across north-west Mayo.’ He was worried about a landslide of the peat damaging the road and risking lives. Trying to store permanently one potential liquid on top of another will be very difficult and David Ball suggests that the proposals from the company are not adequate for this task.

Some bodies even question whether the gas should be exploited at all at this time. FEASTA, an Irish environmental group, say that in the light of the opening of a second gas interconnector between Ireland and Britain, there are no threats to gas supply in the near future. ‘The consequence of the exploitation of the Corrib reserves is simply to over-supply an already fully supplied Irish gas market. Corrib gas is simply not needed at this time.’

Even if the gas were exploited at this time there would be few benefits to the area around the terminal. The scheme may bring gas infrastructure to the west and north-west of Ireland, but that does not necessarily mean that it brings gas to the area. With the exception of Galway city and Ballinasloe, to the extreme south of the region, no local communities will benefit from cheap gas power. The development will serve only to help remove gas from the region to the benefit of those areas which already have a gas distribution network or those areas in which it is planned to provide one in the future.
The area of Erris (Resource C) where this development is proposed is visually distinctive and important as shown by the high number of areas designated for protection. Both remote and aesthetically pleasing, the area is important culturally and environmentally. It is a unique landscape. The value of the landscape will be significantly undermined by the building of the terminal.

As a massive complex on a bogland hilltop, the development will appear totally out of place in this landscape. A narrow strip of windblown conifers will not shield it from view. In any case, the view from the local road leading from Bangor (GR: 8623) would have the structure totally exposed. Approaching from the west everything above 10 metres would be seen. Given that there are 8 storage tanks of around 13 metres, a flare tower of 40 metres, a 12 metre high ground flare, a 20 metre high turbine exhaust stack, a 22 metre telecommunications mast, and other buildings and structures that exceed 10 metres, it is clear that the visual impact will be enormous. The proposed terminal would totally change the nature of this rural environment. In addition, since the complex will be lit up at night, the existence of a 15 hectare industrial site on an exposed hilltop would be seen over a vast area.

Table B

<table>
<thead>
<tr>
<th></th>
<th>County Mayo</th>
<th>Galway City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>€68 million (£45 million)</td>
<td>€250 million (£165 million)</td>
</tr>
<tr>
<td>1998</td>
<td>€75 million (£50 million)</td>
<td>€260 million (£172 million)</td>
</tr>
<tr>
<td>1999</td>
<td>€86 million (£57 million) (288,000 tourists)</td>
<td>€250 million (£165 million) (877,000 tourists)</td>
</tr>
<tr>
<td>Percentage change</td>
<td>+26.6</td>
<td>+2.4</td>
</tr>
</tbody>
</table>

This reduction of landscape quality could have a negative impact on tourism. As Table B shows, the earnings from tourism in County Mayo are significant and growing more rapidly than those for established areas such as Galway City. While tourism is less developed in Erris than in other parts of Mayo, it has an increasingly important role. Tourists regard the scenery, the wild and unspoiled nature of the landscape and the friendly people as the aspects that are special about the Erris area. Most tourists who visit Erris to enjoy outdoor and cultural activities do not want to see the area altered. This development will force major social and environmental change and would threaten potentially sustainable economic growth through tourism.

Adapted from a range of sources: archives of the Western People, the Sunday Business Post online, Friends of the Irish Environment, The Irish Skipper, An Bord Pleanála’s Inspector’s Report 2003 and www.feasta.org
Resource G

Resources in Favour of the Proposed Development

Mayo needs this development. Belmullet Rural District (Resource C) has been steadily losing its population, with a decline of over 5% between 1996 and 2002. This is not a new phenomenon, as the population in the locality has continuously declined for the last 150 years. Over the same period the County Mayo population grew by 5.3%, indicating a drift away from rural areas into the towns and cities. The area around the proposed development is also significantly deprived. One measure of deprivation (based on social class composition, level of education, level of unemployment, proportion of lone parents, the extent of small farming and age dependency levels) ranked the area as 10, on a scale of 1 to 10 with 1 being the most affluent. Belmullet Rural District was placed in the bottom 10% most deprived areas in Ireland.

Unemployment in the Belmullet Rural District is 12%, much higher than in the whole county of Mayo (5%) or the Republic of Ireland (4.5%). One small region, Knocknalower (GR: 8034), is listed as one of the five employment blackspots in Mayo with over 40% unemployment in 2002.

Source: Principal Examiner

The Corrib Natural Gas Project is one of the most exciting and ambitious engineering projects ever undertaken in Ireland. The development will provide increased income to this deprived area, which will be especially important in the out-of-season tourist months. The Corrib Project is already delivering real and tangible benefits for Erris with the average weekly spend on jobs and services in the area now close to €2 million (£1,346,600) and that is before the project has really got off the ground. The project will generate in excess of 700 jobs in the construction phase at the Bellanaboy Terminal. There will be over 100 direct and full time permanent positions created in the locality in the long term. A similar number of contractor and supplier jobs will also be created once the terminal is operational. It has been the experience in areas where gas terminals are located that other industries and enterprises will follow. As of June 2007, there are almost 400 people employed locally in Mayo on the Corrib Project, with approximately 70% of them coming from the Erris area. Overall this is the largest investment ever in Co. Mayo. Given the low population density and the relative deprivation in the area, the terminal will make a considerable difference.

Although County Mayo is an important tourist destination, the proposed development is not close to any major attractions and so the construction will not have an impact on tourism. The additional traffic movements and noise associated with the peat transfer will affect only one small localised area and will have no impact on tourist centres.

The development will act as a catalyst for the regional development of the west of Ireland and of County Mayo in particular. Just as the Cork area was transformed with the opening of the Kinsale gas plant in 1978, the Corrib field will act as a stimulus to further economic growth. The west of Ireland will benefit as the current electricity supply to the region is unreliable and there is no gas distribution system to the west or north-west of the country.

Natural gas is more environmentally friendly than coal or oil. Gas is cleaner than these alternatives, which will make it easier for Ireland to meet its commitments for the reduction of greenhouse gas emissions, such as those agreed through the Kyoto Protocol. It is cleaner and more convenient for customers than other forms of fuel.
Given that gas importation exceeded domestic production in 1999, it is vital that Ireland develops its resources. If Ireland were to remain dependent on imported gas, the nation’s security of fuel supply would be threatened. With a domestic source of gas, the fuel security of Ireland would be ensured. At peak production, the Corrib Project will supply some 60% of natural gas demand.

The landscape around the proposed terminal is composed of undulating, poorly drained peat moorland and acidic grassland. The openness of the landscape is interrupted by large plantations of non-native conifers. The site has been carefully chosen, partly because the existing plantings of conifers will provide immediate and significant screening for the proposed terminal. There will be a dense and tall evergreen screen to an average height of seven metres particularly along the NNW and SSE boundaries. Because the site’s ground level will be reduced by an average of three metres by the removal of the peat, this screening will be even more effective. Screening, in combination with careful attention to design, layout and colouring of the different parts of the development, means that most of the terminal will not stand out in the landscape.

The Corrib Natural Gas Project has a strong focus on minimising emissions, discharges and environmental impact. The gas received by the terminal will contain condensate, water and methanol. The methanol, used as antifreeze, will be recovered and returned to the Corrib gas field for re-use. The condensate will be used as fuel in the terminal. The waste water will be treated before it is discharged to the sea at Broadhaven Bay.

© www.shell.com
Gerry Coyle, Fine Gael Councillor for Belmullet

“Corrib gas will start the engine which will bring greater prosperity to Erris and drive the area forward ... if I lived beside the proposed terminal I might feel differently.”

Local Opponents

“The plant will have no economic advantage for the area. The gas will be transported immediately out of the country and as much as 73% may be exported out of Ireland.”

Quoted in The Observer, 30th January 2005

Dermot Ahern, Communications, Marine and Natural Resources Minister

“It has significance in terms of long-term security of energy supply, our future reliance on indigenous resources and energy pricing. Corrib gas also offers significant jobs potential, both in the initial construction phase and downstream applications in the coming years.”

William Corduff, local farmer

“If it means lying down in front of bulldozers, we will do it. We will do anything to save our land and our livelihoods. We are desperate and we are weary, but we won’t give up”.

Quoted in The Observer, 30th January 2005
Mark Schemes
Geography
Assessment Unit AS 1
Physical Geography
SPECIMEN PAPER

MARK
SCHEME
MARK SCHEMES

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16 and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students’ work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

Introductory Remarks

The assessment objectives (AOs) for this specification are listed below. Students must:

AO1 demonstrate knowledge and understanding of the content, concepts and processes;
AO2 analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts;

AO3 select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.

**General Instructions for Markers**

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

**Levels of Response**

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.
### General Descriptions for Marking Criteria

<table>
<thead>
<tr>
<th>Knowledge and Understanding</th>
<th>Skills</th>
<th>Quality of Written Communication</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</td>
<td>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</td>
<td>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, punctuation and grammar.</td>
<td>3</td>
</tr>
<tr>
<td>The candidate will display an accurate to good knowledge and understanding of many of the relevant concepts/ideas. Much of the body of knowledge that can be expected is given.</td>
<td>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors or misapprehensions may be in evidence.</td>
<td>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, punctuation and grammar. Legibility is satisfactory.</td>
<td>2</td>
</tr>
<tr>
<td>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</td>
<td>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors or misapprehensions may be clearly evidenced.</td>
<td>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, punctuation and grammar. Writing may be illegible in places.</td>
<td>1</td>
</tr>
</tbody>
</table>
Section A

1 (a) Candidates are required to outline one specific hazard related to their fieldwork and to discuss two strategies which were planned to minimise this risk in the field. Any specific hazard which is related to their fieldwork is acceptable.

Level 3 ([5]-[6])
Candidate provides a thorough and detailed discussion of two strategies planned to minimise a clearly identified risk which is related to their fieldwork.

Level 2 ([3]-[4])
Candidate provides an adequate discussion of two strategies planned to minimise an identified risk which is related to their fieldwork. Answers at this level may lack balance, e.g. a detailed discussion of one strategy and only passing reference to a second strategy. Alternatively the strategies discussed may be general in nature and not specifically related to their fieldwork.

Level 1 ([1]-[2])
Candidate provides a limited discussion of two strategies planned to minimise an identified risk which is related to their fieldwork. Alternatively the candidate may identify strategies without discussion.

(b) (3 × [1]) for any valid stages which may have been undertaken to reach a geographical conclusion. No credit for any planning or anything that would lead to the creation of data tables. Expect candidates to complete the diagram by including stages such as:

- data presentation/graphical representation
- data analysis (description)
- statistical analysis (maximum of [1])
- evaluation
- inclusion of secondary data
- statistical interpretation

(c) (i) Statistical analysis aids data interpretation as complex, lengthy raw values can be simplified and summarised into a concise mathematical form. Statistical analysis can provide an objective measure of significance which will provide a sound basis for reliable conclusions.

Award [3] marks for a well developed, thorough answer which details more than one valid purpose.

Award [2] marks for a general but accurate answer which refers to more than one valid purpose.

Award [1] mark for a limited answer which addresses only one valid purpose or simply lists valid purposes without providing detail.
(c) (ii) The statistical analysis performed will depend on the chosen technique.

**A Measure of Central Tendency and Range**

Appropriate of the technique to the aim of the study. [1]
Calculation of the mean/median. [2]
Calculation of the range. [2]

**Spearman’s Rank or Nearest Neighbour Analysis**

Appropriateness of the technique to the aim of the study. [1]
Accuracy of the calculation; method marks awarded appropriately.
If major error in rank order, leading to an incorrect rs calculation – Max [1].
Statistical interpretation. [2] [5]

(iii) Candidates need to progress from the statistical analysis stage of their investigation to the geographical interpretation stage. Do not credit statistical explanation here.

Incomplete or mis-interpreted statistical outcomes can be awarded Level 1 for the geographical interpretation. If geographical explanation links to a different statistical technique to that used in c(i) maximum Level 1.

**Level 3 ([5]-[6])**
Candidate provides a thorough and detailed geographical interpretation of the statistical outcome in relation to the specific aim/hypothesis. The answer should integrate geographical theories/concepts/processes or models if relevant.

**Level 2 ([3]-[4])**
Candidate provides a general but accurate geographical interpretation which relates to their specific aim/hypothesis. Some general reference may be made to geographical theory.

**Level 1 ([1]-[2])**
Candidate provides a very limited geographical interpretation of the statistical outcome. There may be no reference may be made to specific aim/hypothesis or to relevant geographical theory. [6]

(d) Look for quality of explanation and expect a great variation in response as methods will vary according to the chosen field of study.

Award [3]-[4] for a thorough explanation of how one stated method may be improved or modified to increase data accuracy.

Award [1] or [2] for a less detailed answer with more limited understanding of how increased accuracy could be achieved.

Do not credit suggestion of a different study or an extension to the study if it does not relate to the devised aim. [4]
(e) Answers will vary according to the field of study.

Award [3] marks for an answer which outlines a valid/realistic extension to their study and demonstrates clear awareness of how geographical understanding could be enhanced.

Award [2] marks for an answer which outlines a valid/realistic extension to their study and may address how geographical understanding could be enhanced in a general manner.

Award [1] mark for a limited answer which may be general in nature, e.g. more sites, more data. Geographical understanding may not be addressed or may be in the form of vague statements only such as ‘better understanding of rivers’.

Do not credit an answer if the candidate suggests a completely different investigation unrelated to the geographical study undertaken. [3] [30]
Section B

2  (a) Resource 2A shows an arcuate delta. The main processes are:

- deposition – river velocity is reduced as it enters the sea, a body of relatively still water. Deposits create bottomset (finest sediment), foreset (coarser) and topset (coarsest) beds.

- flocculation – the salt in seawater produces an electrical charge that causes fine clay particles to coagulate to form heavier ‘flocules’ which are deposited.

Award [3]-[4] marks for a sound explanation of the process involved with use of appropriate terminology. Do not necessarily expect a balanced answer relating to both processes.

Award [1]-[2] marks for a general explanation of at least one process involved. The use of appropriate terminology may be limited. [4]

(b) Lag time – 9 hours (allow 8-10)

Peak discharge – 47.5 m³/s (allow 47-48) [2]

(c) Deforestation

Since vegetation intercepts rainfall and stores moisture and also takes up water from the soil through its roots (reducing throughflow), its removal speeds up the transfer of water into the river channel. This means the storm hydrograph will, after deforestation, have a steeper rising limb, shorter lag time and greater peak discharge than before the removal of trees.

or

Urbanisation

In an urban area, water cannot infiltrate through tarmac or concrete surfaces. Gutters and drains carry water more quickly into the drainage system. This means that, after urbanisation, the storm hydrograph will have a steeper rising limb, shorter lag time and greater peak discharge than before urbanisation.

In either case expect the use of appropriate terminology.
**Level 3 ([5]-[6])**
Candidate provides a thorough and detailed explanation, using appropriate terminology, of the effect of either deforestation or urbanisation on a storm hydrograph.

**Level 2 ([3]-[4])**
Candidate provides a general but accurate explanation, making good use of appropriate terminology, of the effect of either deforestation or urbanisation on a storm hydrograph.

**Level 1 ([1]-[2])**
Candidate provides a limited response which may refer to the effect of either deforestation or urbanisation on the drainage basin system without relating it to the storm hydrograph. Limited use of appropriate terminology.

3 (a) (i) Candidates should be awarded up to a maximum of [4] for their annotation. A wide variety of answers are possible but the chosen characteristics should be at approximately the correct depths on the profile (as shown below) and must be typical of a mollisols/chernozem.

![Diagram of soil profile](image)
(ii) Monoculture is the specialisation of farming activities into the growth of a single crop. In the case of mid-latitude grasslands, the crop is “grass” or cereals. Promotion of a single species presents herbivores with a uniform food source to which they can readily adapt, so becoming a harmful pest. This leads to widespread use of pesticides and insecticides which also destroy the decomposers, which are vital components in the nutrient cycle. Loss of soil fertility leads to the increased use of artificial fertilisers to maintain soil fertility. When the grasslands are ploughed for cereal production, the breakdown of soil structure has often led to their drying out and exposure to wind erosion. The candidate should give a clear description of each of their chosen effects.

Award [3]-[4] marks for a detailed and thorough description of two ways in which monoculture of mid-latitude grasslands affects the soil. The candidate may give specific examples to illustrate their answers.

Award [1]-[2] marks for a general description or a detailed description of only one way in which monoculture of mid-latitude grasslands affects the soil. [4]

(b) Candidates must name their local ecosystem and state one physical characteristic such as:
climate (temperature, rainfall, seasonal variations, frost-free days etc), soil (type, depth, fertility etc.) relief or geology.

Details of flora/fauna or management/use of the ecosystem are not required.

Influence on biotic components will depend on the ecosystem chosen eg a large number of frost free days in a woodland will produce a longer than average growing season, with greater productivity of leaves and nuts so a large food source for primary consumers such as mice and moths. In a peatland ecosystem the soil has few nutrients so some plants, such as sundew, are carnivorous in order to obtain adequate nutrients.

Reward logical explanation of the influence of the physical characteristic chosen.

Award [3]-[4] marks for a thorough and detailed explanation for how one physical characteristic influences the biotic components of their chosen ecosystem.

Award [1]-[2] marks for a general explanation which may make only limited reference to the biotic components of their chosen ecosystem. [4] [12]
4 (a)  Award [1] mark for identifying any two appropriate air masses – Tropical Maritime and Polar Maritime (or Tropical Continental, Arctic, Polar Continental).

No mark for only one correctly named.

Award $2 \times [2]$ marks for describing the temperature and moisture characteristics of the two air masses eg Polar Maritime air from the north Atlantic is cool and moist, Tropical Maritime air is warm and moist.

(b) (i) Candidates should identify trends and anomalies on the resource. Temperature figures should be quoted. They should note that the Atlantic Ocean temperatures are generally warmer than the land masses at similar latitudes.

Award [3] marks for a detailed and thorough description of the pattern of temperatures shown making specific reference to the Resource and quoting figures.

Award [2] marks for a general but accurate description of the pattern of temperatures shown making specific reference to the Resource.

Award [1] mark for a limited answer which fails to make use of the Resource.

(ii) Factors influencing this temperature pattern could include distance from the equator (latitude), angle of the sun, effects of ocean currents, continentality etc.

Award [3]-[4] marks for a detailed explanation of how one factor influences this temperature pattern.

Award [1]-[2] marks for a general explanation of how one factor influences this temperature pattern.
Section C

5 The details of the answer will depend on the case study chosen. Candidates should discuss both benefits and harmful effects of flooding in a large-scale drainage basin or its delta. The benefits might include the deposition of silt which rejuvenates soil fertility, benefits to specific crops, increase in fish spawning areas, increased transport along rivers and replenishing of groundwater stores. Harmful effects might include damage to property and infrastructure, deaths of local population, outbreaks of waterborne diseases and loss of crops.

Level 3 ([9]-[12])
Candidates provide a detailed and thorough discussion of the benefits and harmful effects of flooding on people. Candidates describe the spatial context for their answer and provide a balanced answer which discusses both benefits and harmful effects for people. There is good reference to case study material throughout the answer.

Level 2 ([5]-[8])
Candidates provide a valid if less detailed discussion of both benefits and harmful effects, or an imbalanced answer which explores one aspect of the question more than the other.

Level 1 ([1]-[4])
Candidates provide a limited discussion which fails to adequately address the question. Knowledge and understanding are limited or no specific basin or delta given. [12]

6 The details of the answer will depend on the case study chosen. Candidates should describe specific vegetation at the small or regional scale and explain how it has developed through a succession of changes. Any type of succession such as lithosere, psammosere, hydrosere or halosere is valid. Good candidates will establish the background conditions of climate and topography. The answer should include references to plant species at different stages and processes such as soil formation and stabilisation as the succession develops.

Level 3 ([9]-[12])
The candidate identifies specific vegetation and provides a general but accurate description and explanation of how the vegetation succession has evolved over time. There is detailed reference to species present and the processes involved.

Level 2 ([5]-[8])
A succession is identified and the description and explanation of its formation is adequate but may be lacking in depth or clarity. Alternatively there may be imbalance between description and explanation.

Level 1 ([1]-[4])
The answer is very generalised with little reference to spatial context or process. [12]
Since the answer requires a description and explanation of the impact of a hurricane event on people and property, these are the details for which marks should be awarded. Candidates must mention a specific hurricane event to be awarded Level 3 marks. Impact on people might include deaths, famine, disease, evacuation and relocation while the impact on property could include destruction of the infrastructure including buildings and communications.

**Level 3 ([9]-[12])**
The candidate provides a detailed and thorough description and explanation of the extent of a specific hurricane’s impact on people and property. Good use is made of case study material which shows depth and detail.

**Level 2 ([5]-[8])**
The candidate produces a valid if less detailed or unbalanced answer. Reference to case study material, although present, is less effective. Depth of knowledge may be limited.

**Level 1 ([1]-[4])**
The candidate produces a limited or inaccurate answer or there is limited reference to case study material.
MARK SCHEMES

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16 and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students’ work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

Introductory Remarks

The assessment objectives (AOs) for this specification are listed below. Students must:

AO1 demonstrate knowledge and understanding of the content, concepts and processes;

AO2 analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts;
AO3 select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.

**General Instructions for Markers**

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

**Levels of Response**

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.
<table>
<thead>
<tr>
<th>Knowledge and Understanding</th>
<th>Skills</th>
<th>Quality of Written Communication</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</td>
<td>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</td>
<td>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, punctuation and grammar.</td>
<td>3</td>
</tr>
<tr>
<td>The candidate will display an accurate to good knowledge and understanding of many of the relevant concepts/ideas. Much of the body of knowledge that can be expected is given.</td>
<td>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors or misapprehensions may be in evidence.</td>
<td>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, punctuation and grammar. Legibility is satisfactory.</td>
<td>2</td>
</tr>
<tr>
<td>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</td>
<td>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors or misapprehensions may be clearly evidenced.</td>
<td>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, punctuation and grammar. Writing may be illegible in places.</td>
<td>1</td>
</tr>
</tbody>
</table>
Section A

1 (a) (i) Instrument – Quadrat

It would be impossible and indeed impractical to study the entire upland area and therefore a quadrat would enable the ecologist to obtain a vegetation sample for measurement. Quadrats have many practical advantages but the answer must focus on the hypothesis stated. Within the quadrat area relevant variables such as plant cover and species type can be measured.

Level 3 ([5]-[6])
Candidate provides a detailed and thorough explanation which closely links the advantages of the quadrat to the stated hypothesis.

Level 2 ([3]-[4])
Candidate provides a general but accurate explanation which links the advantages of the quadrat to the stated hypothesis.

Level 1 ([1]-[2])
Candidate provides a limited explanation of the advantages of quadrats, without a link to the stated hypothesis. [6]

(ii) There are two distinct elements in this question, how and why.
How – candidates need to explain how random sampling may have been conducted. They are likely to describe procedures such as the generation of random number co-ordinates on a gridded map. Alternative objective random procedures can be credited.
Why – candidates need to explain the overall benefits of random sampling.

Level 3 ([7]-[8])
Candidate provides a detailed and thorough answer addressing fully both elements of the question. Candidate provides a well developed description of random sampling procedures and shows a detailed awareness of why random sampling was appropriate. At this level expect an awareness of why alternative methods may be less appropriate. For example, stratified sampling may be inappropriate if no subsets exist within the total population. Systematic sampling will be inappropriate, as the hypothesis does not require the selection of data along a progressive continuum.

Level 2 ([4]-[6])
Candidate provides an adequate answer which addresses both elements of the question. Candidates provide a sound description of random sampling procedures and shows clear awareness of why random sampling was appropriate. At the upper end of this level the candidate may show some awareness of why an alternative method may be less appropriate.
Level 1 ([1]-[3])
Candidate provides a limited answer which may fail to fully address both elements of the question. The candidate provides a limited description of random sampling procedures and shows limited awareness of why random sampling was appropriate.

(b) (i) In C1 land use is predominantly arable [1] whereas in square B2 it is predominantly urban [1].

Accept equivalent words/phrases

(ii) Settlement expansion and growth are strongly influenced by relief. Flat land facilitates construction whereas the highland to the north and north-east of the image presents a barrier to urban sprawl. Settlement has expanded in obvious linear gaps between mountains, which form natural routes offering access. The road pattern can be depicted to the north of the image with linear urban growth due to accessibility to the urban core.

Urban expansion is evident to the south-east along the Manchester Ship Canal – most likely to have been related to the industrial growth of the 19th century when canals provided access for raw materials for industry.

Award [3] for a detailed and thorough explanation of one factor supported by appropriate evidence from the satellite image (grid references, named features or directional observations).

Award [2] for a general but accurate explanation of one factor with some reference to the satellite image (grid references, named features of directional observations).

Award [1] for limited explanation which fails to quote supporting evidence from the satellite image.

(iii) Satellite images are computer enhanced pictures taken from space which provide a large amount of up-to-date information. Therefore they have a wide range of uses which may include:

- monitoring deforestation;
- monitoring global weather systems;
- tracking the movement of storms;
- prediction of weather patterns;
- locating mineral and oil reserves;
- mapping the extent of environmental disasters, eg oil spills, fires, volcanic eruption.

The purpose must be specified clearly. Award [1] for each outline of a valid potential use.
(c) (i) The Power’s Scale is a chart which displays rock shape visually and is therefore open to subjective interpretation. Do not look for a textbook answer but merely a sense of understanding. [2]

(ii) Site 3 [1]

(iii) 20% [1]


Award [2] for an explanation which attributes particle shape to the process of fluvial erosion – attrition. If explanation does not mention attrition [1]. [4] [30]
Section B

2  (a) **Description:** One difference in population structure between inner and outer London should be clearly identified and described quoting relevant figures from Resource 2.
There are a number of differences from which candidates may select any one. Inner London has a lower percentage in the under 15 age bands (approximately 12%) whereas outer London has 18%. Inner London has more in the younger working age groups (34%) whereas outer London has 27%.

**Explanation:** The difference noted should be explained in some depth. For example the higher percentage of people in the younger working age groups in Inner London should be explained in relation to immigration to the inner London area for employment. The lower percentage in the youngest age groups is related to a reduced birth rate in the commercial centre. Outer London is a suburban zone with a young and more balanced structure hence a higher birth rate.

**Level 3 ([5]-[6])**
Candidate provides a thorough and detailed description and explanation of one difference in population structure between the two pyramids. Figures are quoted from the resource. There is sound understanding based on a comparison between the two pyramids/areas.

**Level 2 ([3]-[4])**
Candidate provides a general but accurate description and explanation of one difference in population structure between the two pyramids. Figures may be quoted in relation to one population pyramid only.

**Level 1 ([1]-[2])**
Candidate provides a limited description and explanation of one difference in population structure between two the pyramids. Limited, if any, reference is made to the resource. Alternatively the candidate may provide a sound description without valid explanation. [6]

(b) **Economic implications:** Candidates can select from the cost of pension provision, the reduced numbers in the future workforce, the cost of health care and other services for an ageing population.

**Political implications:** Candidates can select from government plans to raise the pension age, the possibility of means testing state pensions or plans to encourage personal pension schemes etc.

**Level 3 ([5]-[6])**
Candidate provides a through and detailed discussion of both one economic and one political implication of an ageing population. Answer is clearly focused on implications and there is a good balance between the economic and political implications.
Level 2 ([3]-[4])
Candidates provide a general but accurate discussion which covers both an economic and a political implication of an ageing population. Answer remains clearly focused on implications but may display some imbalance.

Level 1 ([1]-[2])
Candidates provide a limited discussion which may focus almost entirely on either an economic or a political implication.

3 (a) Suburbanisation has brought about urban sprawl at the edge of the city into the rural-urban fringe. This process has been made possible by developments in transport allowing people to move away from their place of work in search of better quality housing etc. Suburbanisation has also seen factories locate in the rural urban fringe to avoid congestion and the higher land values in the cities. They have to make use of the table to support their answer.

Level 3 ([5]-[6])
Candidate provides a detailed and thorough explanation showing sound understanding of more than one factor and thorough resource use. Clear comparisons are made between the two areas.

Level 2 ([3]-[4])
Candidate provides an adequate explanation. There is still reasonable understanding but the resource use is less rigorous than the previous level and/or the discussion is lacking in depth.

Level 1 ([1]-[2])
Candidate provides a limited explanation with limited use made of the resource. The explanation may be superficial or may be inaccurate.

(b) Remote rural areas are affected by out-migration especially by the young and economically active age groups. With falling total numbers and an increasingly ageing population some services are no longer viable eg primary schools close, post offices close, public transport services are reduced or withdrawn in some cases. Consequently the area becomes even more isolated which leads to even more out-migration and the area goes into a downward spiral of neglect. Candidates have to identify and describe two problems.

Award [3]-[4] marks for a detailed description of two problems associated with service provision in remote rural areas. Answer must be clearly focused on problems associated with service provision in remote rural areas.

Award [1]-[2] marks for a general description of two problems associated with service provision in remote rural areas. Alternatively the candidate may provide a description of one problem only.
(c) A National Park is a large area of countryside which has scenic attraction. It is mostly privately owned. There is a mixture of land use and a planning authority regulates between the interests of recreation, conservation and the local economy.

An AONB is a much smaller area of land and the local authorities have much greater powers to control the nature of any development that may take place.

Look for a clear distinction in terms of size and the degree of control exercised by the planning authorities for full marks.

4 (a) There is no set measure required but the most likely choices will be PQLI or HDI. Candidates must describe the components that are used in their chosen measure. They should also refer to the range of values of their chosen measure and explain how these values measure development.

Award [1] mark for an appropriate composite measure of development and up to [2] marks for a detailed description of its operation.

(b) Colonialism: is taking political and economic control of a foreign country and establishing some form of administration in that country.

Neocolonialism: is economic control of a foreign and politically independent country through monetary loans or bilateral aid etc.

Look for a clear distinction in terms of the nature of political and/or economic control.

(c) Description: The relationship is a negative one – the higher the educational attainment of mothers the lower the child mortality rate. Candidates should point out how child mortality rates fall with primary education and decline further with secondary or higher education. They should also include the effect GDP (pc) has on the mortality rates.

Explanation: Better-educated mothers will have a better understanding of health care, diet and hygiene for their children. They are also more likely to be living in towns or cities where they will have greater access to doctors etc and they are more likely to be better off and therefore more able to afford medicine.

Level 3 ([5]-[6])
Candidate provides a detailed and thorough description and explanation of the relationship between educational attainment of mothers and child mortality. There is clear reference to the resource with detailed and accurate use of figures.
Level 2 ([3]-[4])
Candidate provides a general but accurate description and explanation of the relationship. Good use is made of the resource and figures are quoted. There may be some imbalance between description and explanation evident.

Level 1 ([1]-[2])
Candidate provides a limited description and explanation of the relationship. There is a limited use made of the resource. Clear imbalance may be evident with little or no attempt made to explain the relationship.

5 The pattern of population distribution needs to be described and then explained in terms of the available resources. Look for a detailed description that shows variations in population density throughout the country and a sound explanation that reveals a clear understanding of the relationship that exists between population distribution and resources. This is case study material so we need to see reference to specific places and figures.

Level 3 ([9]-[12])
There is detailed and thorough description of population distribution with specific reference to figures and places. A clear picture is given of the resources in their chosen case study. There is sound understanding of the relationship between population distribution and the resources.

Level 2 ([5]-[8])
Candidate provides a general but accurate description and explanation but there is less detail and depth throughout or one aspect is only dealt with in a superficial manner.

Level 1 ([1]-[4])
Candidate provides a limited answer which may focus on description only. This answer is lacking in detail and depth on all aspects or there may be incorrect information.

6 Any relevant LEDC city case study is acceptable. Candidates will need to deal with rapid urbanisation in an LEDC city and give some detail on the growth of their chosen LEDC city. They will then have to discuss the problems that this rapid growth has posed for the provision of services and economic activity. As ever this is case study material so we need to see specific detail about a named city. Do not over reward an answer that gives general problems of service provision and economic activity with little or no reference to a real place.

Level 3 ([9]-[12])
There is a good discussion of the pace of urbanisation with specific and detailed reference to a LEDC city. Candidate provides a detailed and thorough discussion of the problems this rapid urbanisation has created for service provision and economic activity in their chosen city.
Level 2 ([5]-[8])
Candidate provides a general but accurate discussion, however there is less
detail and depth throughout or one aspect is only dealt with in a superficial
manner, ie the candidate may discuss urbanisation in their chosen study
without reference to service provision.

Level 1 ([1]-[4])
Candidate provides a limited answer which is lacking in detail and depth on
all aspects or there may be incorrect information. There may be no case
study detail or only passing reference to an LEDC city by name.

7 Any relevant national case study is acceptable. Candidates will need to
describe and explain the regional variations in development that exist in their
national case study. As ever the requirements of a case study must be met –
ie detail about a real place. The regional variations have to be explained
again with specific detail on places.

Level 3 ([9]-[12])
Candidate provides a thorough and detailed description of the regional
variations in development with specific figures and places mentioned. These
differences are explained thoroughly showing sound understanding.

Level 2 ([5]-[8])
Candidate provides a general but accurate answer but there is less detail and
depth throughout or one aspect is only dealt with in a superficial manner.
The answer may be limited to a description of regional variations in their
chosen case study.

Level 1 ([1]-[4])
Candidate provides a limited answer which is lacking in detail and depth on
all aspects or there may be incorrect information. Reference to case study
material may be limited, inaccurate or omitted altogether.

[12]
ADVANCED General Certificate of Education 2010

Geography

Assessment Unit A2 1

Human Interactions and Global Issues

SPECIMEN PAPER

MARK SCHEME
MARK SCHEMES

Foreword

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Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16 and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students’ work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

Introductory Remarks

The assessment objectives (AOs) for this specification are listed below. Students must:

AO1 demonstrate knowledge and understanding of the content, concepts and processes;

AO2 analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts;
AO3 select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.

**General Instructions for Markers**

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

**Levels of Response**

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.
### General Descriptions for Marking Criteria

<table>
<thead>
<tr>
<th>Knowledge and Understanding</th>
<th>Skills</th>
<th>Quality of Written Communication</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</td>
<td>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</td>
<td>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, punctuation and grammar.</td>
<td>3</td>
</tr>
<tr>
<td>The candidate will display an accurate to good knowledge and understanding of many of the relevant concepts/ideas. Much of the body of knowledge that can be expected is given.</td>
<td>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors or misapprehensions may be in evidence.</td>
<td>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, punctuation and grammar. Legibility is satisfactory.</td>
<td>2</td>
</tr>
<tr>
<td>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</td>
<td>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors or misapprehensions may be clearly evidenced.</td>
<td>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, punctuation and grammar. Writing may be illegible in places.</td>
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Section A

Option A: Impact of Population Change

1 (a) The epidemiological transition is the trend for mortality (and also morbidity) to move from the acute infectious and deficiency diseases characteristic of underdevelopment to chronic non-communicable diseases characteristic of modernisation and advanced development. People tend to die of cancer and heart disease and other such things rather than of diseases associated with poor diets and bad sanitation. The transition is associated with death at older ages in the main; people living until their bodies wear out. There are spatial and temporal patterns and trends. LEDCs have the transition still to make; MEDCs have been through it. Seek the sense of it rather than a formal definition.

Award [3]-[4] for a detailed and thorough explanation of the epidemiological transition with draws clearly on material relating to the trend.

Award [1]-[2] for a general but accurate explanation of the epidemiological transition with, at best, only limited reference to material on the trend. [4]

(b) (i) The White Australia policy was designed to keep Australia free from migrants who were not racially, even ethnically similar to the ruling group at that time. They were concerned that allowing in different groups would lead to social unrest and also to a worsened economic situation for Australians.

There must be resource use; if not confine to Level 1. Note the use of the word ‘possible’; this allows them to speculate.

Level 3 ([5]-[6])
The candidate provides a detailed and thorough discussion of the possible considerations that may have led to this policy. The candidate makes full and proper use of the resource. He or she clearly focuses on the question and uses appropriate language and terminology.

Level 2 ([3]-[4])
The candidate provides a general but accurate discussion of the possible considerations that may have led to this policy. There is at least limited resource use and the answer addresses the question, though there may be some problems with depth and focus.

Level 1 ([1]-[2])
Candidate provides a limited discussion which does not adequately deal with the focus of the question i.e. the possible considerations that may have led to the policy. No resource use will see a candidate confined to this level. [6]
Here is where they get the chance to point out the problems with the policy; its overt racism being just the most obvious. Other issues might relate to the difficulties of getting in sufficient migrants with the necessary skills to fulfil Australia’s needs. The abandonment comes about through international pressure and a realisation that officially-sanctioned racism was not acceptable. There is a requirement for resource use. If there is none, maximum [2]. High marks for those who properly focus on the issue.

Award [5] for a detailed and thorough answer clearly explaining why the policy was controversial and making good use of the Resource.

Award [3]-[4] for a general but accurate answer which explains why the policy was controversial. Limited use made of the Resource.

Award [1]-[2] for a limited answer which fails to satisfactorily explain why the policy was controversial or which does not make use of the Resource [5].

c) The question is on their fertility policy case study. If they answer with their migration policy, allow for marks within Level 1 for covering population/resource balance issues. The question is on this population/resource balance; if the answer strays into other reasons for the policy’s development or especially, if it majors on impacts, few marks can be awarded, confine to Level 1. So the focus must be on why did, say, China set up its fertility policy, couched within the notion that they needed to restrain population growth to be able to provide adequate standards for their people based on the availability of resources.

**Level 3 ([11]-[15])**
Candidate provides a detailed and thorough explanation of how one national fertility policy has attempted to achieve a balance between resources and population. There is detailed and accurate case study material.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate explanation of how one national fertility policy has attempted to achieve a balance between resources and population. The candidate draws on an appropriate case study but the depth and detail may be limited.

**Level 1 ([1]-[5])**
Candidate provides a limited answer which may focus on a description of a national fertility policy or explains the impacts of the policy rather than focusing on explaining how the policy attempted to achieve a balance between resources and population. [15] [30]
2 (a) (i) Crude birth rate will probably be the one seen, although standardised fertility rate or general fertility rate would be acceptable. CBR is the number of children born per thousand people per year.

Award [1] for the name; [2] for a correct definition of how it works; [1] if it is partly correct.

(ii) The factors that influence natural population change are those things that alter either death or birth rates. Natural population change does not take migration into account, so do not credit any work on that topic. An ageing population is one where there is a growing preponderance of elderly people and results from a considerable lowering of birth rates and a lengthening in longevity associated with a lowering of death rates. People choosing to have fewer children, starting families later, the ready availability of contraception, all help to explain the first. People surviving into old age might be associated with the epidemiological transition, although they need not mention the term. Candidates should deal with both fertility and mortality changes. If not, Level 2 maximum. There should be resource use; if not Level 2 maximum. Both problems; confine to Level 1.

**Level 3 ([6]-[7])**
Candidate provides a detailed and thorough discussion of the factors which have influenced the trend shown in the resources. The candidate refers to both fertility and mortality rate changes and makes good use of the resource. The candidate displays detailed knowledge of the subject and is able to write about it in depth.

**Level 2 ([3]-[5])**
Candidate provides a general but accurate discussion of the factors which influence the trend shown in the resources. At this level the candidate may focus on only fertility or mortality; alternatively the candidate may not make use of the resources provided.

**Level 1 ([1]-[2])**
Candidate provides a limited outline of the factors which influence the trend shown in the resources. Limited understanding of natural population change. Candidate makes very little or no use of the resource material provided.
(b) People who leave their country because they want to seek a better life are ‘economic migrants’. Thus most migrants, except those who have been coerced to leave by slavery or fled as refugees are economic migrants. Answers that deal with the latter groups should not receive credit. Beware also of material that strays into the causes of migration. What is needed is an evaluation of the contribution economic migrants have made to their host countries. Evaluation requires a balance; expect candidates to briefly detail positive points such as providing a labour force, usually for low status jobs in the service or agricultural sectors; also negative points: social unrest and the charge, maybe unsubstantiated, that ‘they’ are taking ‘our’ jobs and depressing wage rates. Then candidates must conclude that economic migrants have made a positive (or negative) contribution overall or some statement of that form.

Award [5] for a detailed and thorough evaluation of the contribution economic migrants have made to their host countries in recent years. No case study reference is required but candidates at this level may draw on specific examples. There is a clear balance between positive and negative contributions leading to a clear evaluative comment.

Award [3]-[4] for a general but accurate evaluation of the contribution economic migrants have made to their host countries in recent years. At this level there may be a marked imbalance between the positive and the negative alternatively the candidate may offer only a limited, or no, evaluation.

Award [1]-[2] for a limited response which deals only with the positive or negative contributions and makes no attempts to evaluate.

(c) Candidates have studied service provision, economic activity and social stability in relation to their two case studies. In each case migration can have both positive and negative impacts on the two types of area. Out-migration can relieve population pressure and ease unemployment, both positive; but it can reduce population thresholds below viability for keeping, say, shops open or can handicap the agricultural sector by taking away the young people, both negative. In the reception area migrants can do jobs the locals do not want to do or will they steal jobs away from the locals and depress wages? Similar positive and negative issues can be constructed for the other factors. So there is plenty to write about and do not seek each of their services, economic activity and social stability being in there, fully discussed. An acceptable answer could focus on just one aspect if presented at sufficient depth. But do insist on a balance of positive and negative material for Level 3, also upon both case studies making an appearance. Ensure materials relating to both positive and negative considerations are present for Level 2 or 3. If there is only one case study, confine to Level 1.
Level 3 ([11]-[15])
Candidate provides a detailed and thorough discussion on both the positive and negative implications of migration. There is detailed and accurate reference to their two small-scale case studies of both out-migration and in-migration. There is a good balance in all respects; in-migration/out-migration; positive/negative.

Level 2 ([6]-[10])
Candidate provides a general but accurate discussion of the positive and negative implications of migration drawing on material from two small-scale case studies. At this level there may be some imbalance in relation to either in-migration/out-migration or positive/negative implications. Reference is made to both case studies but the depth and detail may be limited.

Level 1 ([1]-[5])
Candidate provides a limited discussion of the implications of migration. Answers at this level may be limited to a discussion of positive or negative implications only; alternatively the candidate may not present any case study material whatsoever.
Option B: Planning for Sustainable Settlements

3 (a) (i) The ecological footprint measures how much land and water area a human population, of any scale from the earth to an individual, requires to produce the resources it consumes and to absorb its wastes under prevailing technology. It is often calculated in global hectares, a hectare of world average productivity, with resource and waste flows measured in terms of the biologically productive area necessary to maintain these flows. The national footprint accounts put forward by the Global Footprint Network and the WWF combine about 200 categories of resource and waste including agricultural products, fibres, livestock, fish, timber and fuels. They track especially one major waste product, carbon dioxide. Seek an understanding of the fact that the footprint is a complex, multivariate measure and that carbon dioxide is a significant component to award more than [2].

Award [3]-[4] for a detailed and thorough explanation of the complex nature of an urban ecological or carbon footprint. Expect reference to the multi-variate nature of the footprint and for reference to the typical categories used in the calculation of such a footprint.

Award [1]-[2] for a general explanation which sees the carbon footprint in more simple terms perhaps linked only to carbon dioxide.

(ii) The calculation of the footprint, which can be done for urban areas as well as countries etc, produces a measure of overshoot (the excess area that is needed to sustain the city). Cities being concentrations of people on non-productive land will have a footprint that undershoots. Comparisons can be made as to how much overshoot each city has and thus how sustainable they are. Ratios comparing the footprint per person can easily be constructed. Seek understanding for high marks.

Award [3] for a detailed understanding of how the urban ecological or carbon footprint can be used to demonstrate that some urban areas are less sustainable than others. Candidate clearly recognises that urban areas are concentrations of people on non-productive land hence cities have a footprint which overshoots and explains how comparisons can be made.

Award [2] for a general understanding that cities have a footprint which overshoots and relates the scale of the overshoot to sustainability.

Award [1] for a limited understanding which may be confined to comparing urban ecological or carbon footprints.
(b) Sustainable development regarding cities tries to minimise the amount of resources used by the citizens, including energy used in transportation. Thus an effective policy on transportation would be to encourage high-density use of public transportation rather than cars; maximise use of non-polluting forms of transport such as bicycles, and encourage an integrated transportation network. Portland scores pretty well here with its MAX; the Fareless Square scheme, both of which encourage public transport, and the way in which bikes are catered for, even on the bus. The lack of cars on the streets at 09.30 in the morning is testament to the success of the policy. The task is not just to describe and evaluate the transport policies of Portland, but to relate these to sustainability. If candidates do not do this, they are to be limited to Level 2 maximum. No resource use (though it is hard to see how this could be so), Level 1.

Level 3 ([6]-[8])
Candidate provides a detailed and thorough answer which clearly relates the material provided in the Resource to the principles of sustainable development. There is significant resource use and the answer demonstrates thorough understanding of the issues.

Level 2 ([4]-[5])
Candidate provides a general but accurate answer which shows sound awareness of the strategies but may not link the material overtly to sustainability principles can be placed here if the answer is otherwise excellent. Alternatively there may be limited understanding of the principles of sustainable development. There is good resource use.

Level 1 ([1]-[3])
Candidate provides a limited answer which makes only passing reference to the resources provided or may misinterpret them. Limited understanding of the principles of sustainable development.

(c) They have one case study and the question requires them to set this in a context of how successfully the traffic management strategies have alleviated traffic and transport problems. For example, the London congestion charge was brought in to alleviate the social, economic and environmental problems associated with congestion and to boost public transport’s role. How successful has it been? Is there less congestion, less pollution? Does the scheme operate efficiently? Is there a more efficient and sustainable public transport system as a result? The details to be seen will depend on their choice of case study. If the answer does not have the necessary focus, confine to Level 1. No case study, Level 1.

Level 3 ([11-15])
Candidate provides a thorough and detailed evaluation of the success of a specific traffic management strategy. Answers at this level present detailed material from their case study. There is proper focus on how successfully the policies are solving the problems and the answer displays command of the material and knowledge of the issues. There is a clear evaluation stated of the success.
Level 2 ([6-10])
Candidate provides a general but accurate evaluation of the success of a specific traffic management strategy. There has to be case study material and some focus on the evaluation of the traffic management strategies. Answers will be competent at this level but may lack depth and detail.

Level 1 ([1-5])
Candidate provides a limited answer which may outline a traffic management strategy in general without the required case study focus. Alternatively there is no attempt to evaluate the success. [15] [30]

4  (a) There are three tasks here, do not expect lengthy answers given the modest number of marks available. ‘Social’ might include physical and mental well being; ‘economic’, such matters as the benefits from an efficient transport system; ‘environmental’, anything from reducing waste to combating global warming. There is no fixed list of considerations.

Level 3 ([5]-[6])
Candidate identifies appropriate examples and provides a detailed explanation of the social, economic and environmental considerations that have given rise to the promotion of sustainable development.

Level 2 ([3]-[4])
Candidate identifies appropriate examples and provides a general explanation of the social, economic and environmental considerations; alternatively the answer may be unbalanced or may omit one category.

Level 1 ([1]-[2])
Candidate identifies appropriate examples and provides a limited explanation of the social, economic and environmental considerations. Alternatively the candidate may provide a detailed explanation of one category only. [6]

(b) This is quite a complex model, so allow for them to have spent a little time in its perusal. The candidates should recognise the individual elements of the model that reflect sustainability and be able to suggest how far the model overall works in that regard. No evaluation, maximum Level 2. No overt resource use, though how could this be so, confine to Level 1.

Level 3 ([7]-[9])
Candidates provide a detailed and thorough evaluation based on full use of the Resource and setting its proposals into a sustainability framework. There is a clear attempt to evaluate the model as required.

Level 2 ([4]-[6])
Candidates provide a general but accurate evaluation based on sound use of the Resource. A detailed description of the Resource could be awarded Level 2. The evaluation may at best be limited.
(c) ‘LA21 recognises that local governments and the wider communities they represent are ideally positioned to take the lead in achieving ecologically sustainable development through integrating environmental, social and economic goals on a local level’. This statement comes from a website for South Australia (http://www.environment.sa.gov.au/sustainability/la21.html), making the point that Local Agenda 21 is a worldwide responsibility. The candidates have a case study and here is the opportunity to use it. Note that the requirement is to describe and explain. If there is no explanation, confine to Level 1, we need to see more than just a list of policies. The focus has to be on planning, otherwise confine to Level 1. The details expected cannot be predicted here, it depends on their case study, but there must be some recognition of the breadth of the goals of Local Agenda 21 – the environmental, social and economic issues mentioned by the Australians. The requirement is for them to look at impact, if the answer is on the way in which the policy was drawn up, confine to Level 1.

Level 3 ([11]-[15])
Candidates provide a detailed and thorough description of the impact of LA21 on planning in relation to their chosen case study. There will be a detailed and thorough explanation of Local Agenda 21 in the area and the focus of the answer will be upon its impact. Reference to case study material will be detailed and accurate.

Level 2 ([6]-[10])
There are no sub-optimal penalties for Level 2. Candidate provides a general but accurate description of LA21 on their chosen case study. There will be a sound explanation of LA21 in the area and the answer will focus on its impact. Reference to case study material is present but in limited depth and detail.

Level 1 ([1]-[5])
The range of sub-optimal possibilities for achieving Level 1 were listed above. Candidate provides a limited description and explanation of the impact of LA21 on planning. Alternatively there may be reasonable description of LA21 but with severely limited, if any, explanation.
Option C: Issues in Ethnic Diversity

5 (a) (i) This question deals with the complexities of using primary factors to define an ethnic group. The specification lists race, nationality, language, religion and perceived ethnic identity as primary factors. The Resource mentions race, nationality and religion and adds the idea that the different ethnic groups in Scotland attribute different importance to these factors. This is where the perceived ethnic identity factor comes in. The candidate has to identify the primary factors used here and discuss their relative importance. They have to bring in additional material. This can be in the form of a deeper discussion and/or bringing in the last primary factor of language. They have to clearly evaluate the validity of the statement.

If there is no additional material used award at Level 1 maximum.
If there is no use of Resource 5 award at Level 1 maximum.
If they do not address the ‘to what extent’ aspect award from Level 2 maximum.

Level 3 ([7]-[8])
Candidate provides a detailed and thorough evaluation of the validity of the statement. The candidate makes good use of the resource and draws on additional material to provide a sound discussion, showing a good understanding. There is a clear evaluation of the validity of the statement.

Level 2 ([4]-[6])
Apart from the sub-optimal situation above an answer at this level would still have worthwhile material but will show limited depth and detail. Candidate will make use of the resource material and draws a tentative evaluation.

Level 1 ([1]-[3])
Any of the two sub-optimal situations given above will apply to this level. This is an answer flawed by lack of detail/depth or accuracy. Evaluation, if present may be weak. Limited, if any, use is made of the Resource.

(ii) The Location Quotient shows the degree of concentration [1] of particular groups (in this case) in specific areas in comparison with the national/regional figures [1]. Values of less than 1 mean the group is under represented, values in excess of 1 mean that the group is over represented [1]. For the full marks they do need to show an understanding of the range of values.

(b) Multi-culturalism can maintain ethnic diversity because the various groups in society live separate lives with their own culture and services. They may even speak their own language, live in segregated communities etc. Candidates may use examples and that would be an appropriate way to go about this question but there is no penalty for those who make no reference to examples.
Award [3]-[4] for a detailed and thorough explanation of how multi-culturalism can maintain ethnic diversity.

Award [1]-[2] for a general explanation with limited detail.

(c) This is their case study material of ethnic conflict at the national scale. They have to discuss the causes of the conflict, the outcomes and responses to the conflict. Do not reserve half marks for each part of the question but if one is omitted completely then levels divided by two should be awarded.

**Level 3 ([11]-[15])**
Candidate provides a detailed and thorough discussion covering all aspects of the question. There is a correct choice of case study. There is good understanding shown with depth and detail in all aspects.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate discussion covering all aspects of the question. The case study is still appropriately chosen but there is less detail and depth throughout or one aspect is only dealt with in a superficial manner.

**Level 1 ([1]-[5])**
Candidate provides a limited discussion; case study material may be inappropriate (wrong scale) or may be inaccurate.

6 (a) (i) The Resource presents a number of facts concerning ethnic minorities in Britain. The key word in the question is ‘evaluate so therefore candidates will have to consider the extent to which the impact of ethnic diversity on the UK has had positive outcomes. They do not necessarily have to mention every single point (they may even merge some of the points) but we do need to see thorough resource use and the points discussed fully. We also need to see balance between positive and negative outcomes. Additional material must be used either in the form of extra references or a deeper understanding. If there is no use of Resource 6 award at Level 1 maximum.

**Level 3 ([7]-[8])**
Candidate provides a detailed and thorough evaluation of the statement. There is good resource use, figures are used and there is a clear understanding shown and extra material, as described above, is used. There is reference to both positive and negative outcomes and both are treated to the same depth.

**Level 2 ([4]-[6])**
Candidate provides a general but accurate evaluation of the statement. An answer at this level would still have worthwhile material but the depth and detail are insufficient for higher marks, the extra material may be used less effectively. The balance between positive and negative outcomes may not be in evidence or the resource use may lack rigour.
Level 1 ([1]-[3])
Candidate provides a limited answer which may describe the Resource material but fails to evaluate the above statement. Alternatively the candidate may attempt to evaluate the statement with reference to Resource 6.

(ii) The Chi squared test in this case would test samples of the two populations to see if there were significant differences in their full time educational attendances. This is done by looking at the actual full time educational attendances (observed) of the Indian and White populations and the expected full time educational attendances. The result allows us to see whether the differences are statistically significant or simply chance occurrences. Look for understanding of what the Chi squared test actually does for the marks.

(b) Territorial disputes: If a group of people feel they are on the wrong side of a political boundary ethnic conflict is always a possibility particularly if there is an underlying tension there to start with. Make sure they relate their answer to ethnic conflict. They have to explain how territorial disputes can be a cause of conflict so we will need more than a definition. There is no requirement for examples to be used but many will do so, that would make the task easier. However, as the question is set this is not necessary and full marks are available to those who answer competently with no examples.

Award [3]-[4] for a detailed and thorough explanation of how territorial disputes can be a cause of ethnic conflict in plural societies. The candidate may draw on specific examples but this is not a requirement.

Award [1]-[2] for a general explanation with limited detail showing territorial disputes can be a cause of ethnic conflict in plural societies.

(c) This is their urban case study. They have two things to do here – discuss the processes maintaining ethnic diversity in their city and their consequences. Do not reserve half marks for each of the two parts of the question, as the amount of detail they have will be dependent on their choice of case study. However, if one part is missed completely, then award from levels divided by 2.

Level 3 ([11]–[15])
Candidate provides a thorough and detailed discussion of both the processes which have maintained ethnic diversity and their consequences. There is an appropriate choice of case study. There is good understanding shown with depth and detail in both aspects.

Level 2 ([6]–[10])
Candidate provides a general but accurate discussion which addresses both elements of the question. The case study choice is still appropriate but there is less detail and depth throughout or one aspect is only dealt with in a superficial manner.
Level 1 ([1]-[5])
Candidate provides a limited discussion which fails to adequately address both elements of the question. This answer is lacking in detail and depth on all aspects or there may be incorrect information. [15] [30]
Section B

Global Issues

(a) Candidates need to describe fully how human activities have given rise to any one of the following:

**Methane**: possible causes include increases in landfill sites and associated leakage, rice cultivation and pastoral farming.

**Sulphur dioxide**: possible causes include the use of fossil fuels either for domestic use or industrial developments.

Candidates need to describe one of these in some detail. There is no requirement for examples of places but many may adopt that approach. Full marks are available for a sound description without reference to places.

Award [3]-[4] for a detailed and thorough description showing how human activity has given rise to the chosen primary gaseous pollutions.

Award [1]-[2] for a general description providing limited detail on how human activity has given rise to the chosen primary gaseous pollutant.

(b) Candidates should state the aim(s) of their investigation and discuss its findings. The content will depend on the nature of the candidate’s study. If the aim(s) are not stated maximum Level 2. If the findings are absent maximum Level 1.

**Level 3 ([5]-[6])**
There is a precisely stated aim. The discussion clearly demonstrates how the candidate’s understanding of air pollution was informed by undertaking this investigation.

**Level 2 ([3]-[4])**
Where an aim is stated it may be overly general or imprecise. The study has validity. The candidate displays some understanding of how their research findings informed them about air pollution.

**Level 1 ([1]-[2])**
Where an aim is stated it may be vague. Discussion may lack depth of understanding or coherence.

(c) Using their case study they have to do four things – describe the causes of air pollution; describe the environmental and health impacts of the pollution and evaluate the management strategies employed to deal with it. Do not reserve equal marks for each part of the question as the detail they will have on each will depend on their case study. However, if one aspect is missed completely, award Level 2 maximum. Similarly do not expect a given number/type of causes and impacts to be discussed. Remember this is case study material and we should be guided by the normal requirements of a good case study answer ie knowledge of place and detail.
Level 3 ([15]-[20])
Candidate provides a detailed and thorough description of the causes of air pollution, its environmental and health impacts and clearly evaluates the management of air pollution. There is clear, detailed and accurate reference to case study material. The synoptic nature of the question is clearly addressed.

Level 2 ([7]-[14])
Candidates provide a general but accurate description of the cause of air pollution, its environmental and health impacts and draws a tentative evaluation. There may be some imbalance evident with one aspect being dealt with in a superficial manner. Reference is made to case study material but this may be generalised. The synoptic nature of the question is addressed.

Level 1 ([1]-[6])
Candidate provides a limited answer which may fail to address one element of the question. Evaluation, if present, is limited. Case study reference may be limited. The answer may fail to address the synoptic nature of the question.

8 (a) Candidates should be able to discuss one benefit such as the use of radiation therapy in medical diagnosis and treatment and the advantages of nuclear energy for power generation in comparison with the burning of fossil fuels. Some may argue that nuclear weapons even helped to keep world peace during the Cold War by threatening mutual annihilation if conflict was allowed to escalate.

Award [3]-[4] for a detailed and thorough discussion of one way in which nuclear energy can be said to benefit humanity.


(b) Candidates should state the aim(s) of their investigation and discuss its findings. The content will depend on the nature of the candidate’s study. If the aim(s) are not stated maximum Level 2. If the findings are absent maximum Level 1.

Level 3 ([5]-[6])
There is a precisely stated aim. The discussion clearly demonstrates how the candidate’s understanding of nuclear energy was informed by undertaking this investigation.

Level 2 ([3]-[4])
Where an aim is stated it may be overly general or imprecise. The study has validity. The candidate displays some understanding of how their research findings informed them about nuclear energy.

Level 1 ([1]-[2])
Where an aim is stated it may be vague. Discussion may lack depth of understanding or coherence.
(c) Candidates should show understanding of a range of pollution risks associated with nuclear power generation such as long term health issues for employees and their families, accidents at power plants, the risks of accident or terrorist incident when fuel is transported and the storage and disposal of waste products. For those who omit either actual or potential risks of nuclear energy, award Level 2 maximum. Evaluation of the evidence would involve assessing some aspects as having more validity than others, or even rejecting some of it as being subject to undue bias. We want to see a good understanding of this topic and good answers will have accurate figures and detail on specifics. Do not over reward candidates who deal with this question in a general manner only. Such answers should be awarded Level 1 maximum.

Level 3 ([15]-[20])
Candidates provide a detailed and thorough evaluation of the evidence that can be presented in support of the statement. Candidate clearly addresses both actual and potential risks. There is clear evaluation of the evidence which will be supported by detailed and accurate figures and detail on specifics. The synoptic nature of the question is clearly addressed.

Level 2 ([7]-[14])
Candidate provides a general but accurate answer which attempts to evaluate the evidence that can be presented in support of the statement. Alternatively the answer may be unbalanced addressing only the actual or potential risks. The supporting evidence may be generalised or there may be gaps evident. The synoptic nature of the question is addressed.

Level 1 ([1]-[6])
Candidate provides a limited answer which may be limited to a description of potential and/or actual risks with little or no attempt to evaluate the validity of the statement. Supporting evidence may be limited or lacking in detail. The answer may fail to address the synoptic nature of the question.

9 (a) The potential beneficial impacts include: increased yields, shorter growing season, resistance to pests and diseases – all of which should be very beneficial in a world of growing population and reduced available land for cultivation. It may also be possible to increase the nutrition value of food and improve taste. Crops can also be grown to meet specific demands of the food processing industry and there may also be medicinal benefits. The technology needed to do these things is largely in the hands of TNCs such as Monsanto who will provide job opportunities etc. There is no set number of impacts required but there has to be more than one. The question asks for potential beneficial impacts so there is no reward for anyone who presents information on the disadvantages of GM crops.
Award [3]-[4] for a detailed and thorough outline of the potential beneficial impacts of GM crops.

Award [1]-[2] for a general outline with limited detail.

(b) Candidates should state the aim(s) of their investigation and discuss its findings. The content will depend on the nature of the candidate’s study. If the aim(s) are not stated maximum Level 2. If the findings are absent maximum Level 1.

Level 3 ([5]-[6])
There is a precisely stated aim. The discussion clearly demonstrates how the candidate’s understanding of agricultural change was informed by undertaking this investigation.

Level 2 ([3]-[4])
Where an aim is stated it may be overly general or imprecise. The study has validity. The candidate displays some understanding of how their research findings informed them about agricultural change.

Level 1 ([1]-[2])
Where an aim is stated it may be vague. Discussion may lack depth of understanding or coherence.

(c) This is their case study of a region undergoing agricultural change. There are two things to do here but do not reserve equal marks for each as the detail they will have on each will depend on their case study. However, if one aspect is missed completely, award maximum Level 2. Similarly do not expect a given number/type of change to be discussed. They must proceed to discuss how these changes affect the environment and how these can be managed. Remember this is case study material and we should be guided by the normal requirements of a good case study answer ie knowledge of place and detail.

Level 3 ([15]-[20])
Candidate provides a detailed and thorough discussion of the environmental consequences of agricultural change and how these may be managed. There will be detailed, accurate case study reference. The synoptic nature of the question is clearly addressed.

Level 2 ([7]-[14])
Candidate provides a general but accurate discussion of the environmental consequences of agricultural change and how these may be managed. Alternatively some degree of imbalance may be evident with one aspect being dealt with superficially. Choice of case study is appropriate although reference may be generalised or lacking in detail. The synoptic nature of the question is addressed.
Level 1 ([1]-[6])
Candidate provides a limited discussion of the environmental consequences of agricultural change and how these may be managed. Alternatively the answer may fail to address one element of the question. Reference to case study material, if present, may be limited or inaccurate. The synoptic element of the question is not addressed. [20] [30]

10 (a) Carrying capacity: refers to the number of tourists who can visit/use an area/facility without causing long-term damage. This is clearly a subjective matter and its interpretation will vary depending on the nature of the facility in question. A mountain trail will have a much lower carrying capacity than a seaside resort.

Social sustainability: What will be the impacts of tourist developments on local society? Will the influx of western tourists to the newly emerging tourist destinations in North Africa have a detrimental effect on existing codes of behaviour?

Award [3]-[4] for a detailed and thorough explanation of one of the given terms relating to tourism change and management. There will be an appropriate example given.

Award [1]-[2] for a limited explanation or where no example is stated. [4]

(b) Candidates should state the aim(s) of their investigation and discuss its findings. The content will depend on the nature of the candidate’s study. If the aim(s) are not stated maximum Level 2. If the findings are absent maximum Level 1.

Level 3 ([5]-[6])
There is a precisely stated aim. The discussion clearly demonstrates how the candidate’s understanding of tourism and its management was informed by undertaking this investigation.

Level 2 ([3]-[4])
Where an aim is stated it may be overly general or imprecise. The study has validity. The candidate displays some understanding of how their research findings informed them about tourism and its management.

Level 1 ([1]-[2])
Where an aim is stated it may be vague. Discussion may lack depth of understanding or coherence. [6]

(c) Eco-tourism was meant to allow tourism to develop without the damage to the environment associated with the standard package holiday to Spain etc. Tourists were meant to live like the locals and experience the way of life of the region they were visiting. The money generated from this tourism was meant to go directly to local people and the entire development was to be sensitive to the environment. This was the theory but many will argue that the reality is very different. There are claims of local people being displaced from their land to make way for tourists. There are claims of tourists being exploited by local street traders. There are claims that the safari style holidays to Kenya threaten wildlife etc. We need to see a well developed answer that has plenty of detail to bring
to this answer. They will need to say something about eco-tourism and the principles underlying it before explaining the problems associated with it. For those who only deal with what eco-tourism destroys award from Level 2 maximum. We should not over-reward an answer that makes no specific reference to places. Such answers should be awarded Level 1 maximum.

**Level 3 (15-20)**
The candidate provides a detailed and thorough discussion clearly stating to what extent they agree with the statement and clearly justifying their viewpoint. This will be a sound answer that shows good understanding of the topic. It will have detailed and accurate case study material and will demonstrate knowledge of the principles underlying eco-tourism. The candidate will understand the arguments against eco-tourism and will give a clear measure of the extent to which they agree with the statement. The synoptic nature of the question is clearly addressed.

**Level 2 (7-14)**
The candidate provides a general but accurate discussion and states to what extent they agree with the statement. The answer may only address in detail one element of ecotourism namely that which it destroys. Appropriate case study material will be used but this may be limited in depth and detail. The candidate provides a limited justification of their viewpoint. The synoptic nature of the question is addressed.

**Level 1 (1-6)**
Candidate provides a limited discussion which may be restricted to one element of ecotourism, most likely a limited discussion of what it destroys. Case study material may be inappropriate or omitted altogether. There is limited, if any, attempt to show the extent to which the candidate agrees with the statement and/or there may be no justification of their viewpoint. The synoptic nature of the question is not addressed.
MARK SCHEMES

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16 and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students’ work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response - all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

Introductory Remarks

The assessment objectives (AOs) for this specification are listed below. Students must:

AO1 demonstrate knowledge and understanding of the content, concepts and processes;

AO2 analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts;
AO3 select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.

**General Instructions for Markers**

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

**Levels of Response**

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.
### General Descriptions for Marking Criteria

<table>
<thead>
<tr>
<th>Knowledge and Understanding</th>
<th>Skills</th>
<th>Quality of Written Communication</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</td>
<td>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</td>
<td>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, punctuation and grammar.</td>
<td>3</td>
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<tr>
<td>The candidate will display an accurate to good knowledge and understanding of many of the relevant concepts/ideas. Much of the body of knowledge that can be expected is given.</td>
<td>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors or misapprehensions may be in evidence.</td>
<td>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, punctuation and grammar. Legibility is satisfactory.</td>
<td>2</td>
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<tr>
<td>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</td>
<td>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors or misapprehensions may be clearly evidenced.</td>
<td>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, punctuation and grammar. Writing may be illegible in places.</td>
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Section A

Option A: Fluvial and Coastal Environments

1 (a) The answer may focus on one impact in detail or two or more impacts in less detail for maximum marks. Although not requested candidates may bring in place references to illustrate their answer. Impacts may include: environmental destruction and human resettlement caused by HEP schemes eg Three Gorges Dam (China).

Award [5] for a thorough and detailed description of the impact(s) of energy production demands on river and valley zones.

Award [3]-[4] for a general but accurate description of the impact(s) of energy production demands on river and valley zones.

Award [1]-[2] for a limited description of the impact of energy production demands on river and valley zones. [5]

(b) (i) Two of the four pairs of diagrams should be discussed with [2] for each negative impact. These impacts involve habitats rather than simply comments about the hydrological changes involved.

A: the lack of vegetation may both reduce food supplies and shading cover for fish life. Water temperatures will also vary more over time.

B: this lack of sorting reduces the variation of habitat diversity affecting both insect (invertebrate) and fish life cycles. Result of river straightening.

C: the increased water velocity across the whole river at bankfull means there is no slack or slow water for the aquatic life to find shelter or rest.

D: uniformly shallow water flow exposes the river life to hazards, especially the fish stocks.

(2 × [2]) [4]

(ii) Challenges may include:

- a delay in the proposed timing of the scheme due to fish breeding or birds nesting on the river bank;

- accessibility issues if one part of the river bank is to be left undisturbed.

No case study detail is required but candidates may make reference to named schemes to illustrate their answer.
Level 3 ([5]-[6])
The candidate displays a thorough and detailed understanding of the characteristics of environmentally sensitive engineering schemes and the challenges they can pose. If the candidate focuses only on one challenge it must be explained in depth. A case study is not required for this level.

Level 2 ([3]-[4])
Candidates provides a general but accurate explanation which contains relevant material but has limited range and detail.

Level 1 ([1]-[2])
Candidate provides a limited explanation which contains little relevant material. Candidates at this level may fail to focus on the challenges of environmentally sensitive engineering schemes. [6]

(c) Both hard and soft engineering strategies are required and specific description in the context of a relevant case study.

Candidates must clearly evaluate the impact of hard and soft engineering strategies and this must be applied to impacts on both the human and physical environments. Positive and negative impacts should be included although it is not necessary to have an equal balance. Answers that do not recognise the synoptic nature of the question and do not have references to the human environment should be confined to Level 1.

Level 3 ([11]-[15])
Candidate provides a detailed and thorough description of the nature of hard and soft engineering strategies used to protect coastal areas. Any appropriate case study is acceptable; relevant case study information is detailed and accurate. Evaluation of the impact of these strategies on both the human and physical environment is thorough.

Level 2 ([6]-[10])
Candidate provides a general but accurate description of the nature of hard and soft engineering strategies used to protect coastal areas. An appropriate case study context is used although reference may be more generalised in nature. Evaluation of the impact of these strategies on both the human and physical environment is general and may be unbalanced.

Level 1 ([1]-[5])
Candidate provides a limited description with little attempt at evaluation. Case study is appropriate but there is little development of material. The answer may fail to address the synoptic nature of the question. [15] [30]
2  (a) No specific location is required but the ideas presented should be relevant to an inhabited coastline zone. The increased demand element should be developed.

Award [5] for a detailed and thorough explanation which is clearly related to an inhabited coastline zone. Candidate clearly addresses the increasing pressure element of the question.

Award [3]-[4] for a general but accurate explanation which is related to an inhabited coastline zone. Where the candidate fails to address the increasing pressure element of the question max [3].

Award [1]-[2] for a limited explanation which may refer to coastlines in general or may fail to address the increasing pressure element. [5]

(b) In Resource 2A the coastal defences may be maintained due to the number of residential properties along this coastline and the presence of a road whereas in Resource 2B there may not be any economic or social argument for the maintenance of the coastal path. The wording of the question allows for speculation but for full marks the suggestions must be clearly supported by the photographic evidence.

Award [3]-[4] for a detailed and thorough answer which addresses both Resource 2A and 2B. Appropriate suggestions are given with sound development of ideas.

Award [1]-[2] for a general answer which addresses both Resources 2A and 2B. Appropriate suggestions are given with limited development of ideas. Alternatively the candidate may address one of the resources only. [4]

(c) A depositional or erosional landform is required. A diagram is a prerequisite but this is as an aid to the explanation. Both description and explanation should be accurate and relevant to the stated type of landform.

Level 3 ([5]-[6])
Candidate provides a detailed and thorough description and explanation of the processes which lead to the formation of their chosen landform. A clearly presented illustrative diagram is included.

Level 2 ([3]-[4])
Candidate provides a general but accurate description although the explanation of the processes which lead to the formation of their chosen landform may not be fully developed.

Level 1 ([1]-[2])
Candidate provides little relevant detail relating to processes or resulting landform. Lack of understanding may be evident. [6]
(d) Conflicts, plural should be identified. Discussion should clarify the groups involved and the nature of the conflict arising from the management of the selected river basin. These conflicts should be used to show the interdependent nature of drainage basins with concepts of interlinked processes and flows. Answers that do not recognise the synoptic nature for the question should be confined to Level 1.

**Level 3 ([11]-[15])**
Candidate provides a detailed and thorough discussion in which a range of conflicts are detailed for an appropriate case study. The conflicts of interest are clearly developed to show the interdependent nature and interaction of the physical and human systems within a drainage basin management scheme.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate discussion based on an appropriate case study. Conflicts are identified though detail may be incomplete. The synoptic and interdependent concepts are not well handled. Alternatively the candidate may discuss interdependence but not adequately use the case study conflicts to illustrate the idea.

**Level 1 ([1]-[5])**
Candidate provides a limited discussion with little of relevance either as a case study or in terms of interdependence reflected in conflicts. Poor comprehension of the demands of the question. An answer which fails to address the synoptic nature of the question should be confined to Level 1.  

[15] [30]
3 (a) The distribution of the tropical forest biome coincides with the equatorial regions which receive rain more or less all year. As the ITCZ moves north/south so it carries in the rains of the area of equatorial convection uplift. The tropical grassland biome is found in regions which are seasonally wet, in the north in July and in the south in January. The candidate needs to both describe and explain the two distributions.

Constant heavy rain supporting the forests with the wet and dry tropical climate sustaining only a grass-dominated cover.

Level 3 ([7]-[10])
Candidate provides a detailed and thorough description and explanation of each biome’s location, the nature of the shifting pressure and rainfall belt and how these impact on the nature of the vegetation. Good use is made of the resource.

Level 2 ([4]-[6])
Candidate provides a general but accurate description and explanation which may focus on one biome only. Reasonable use is made of the resource.

Level 1 ([1]-[3])
Candidate provides a limited description and explanation with little relevant use of the resource.

(b) (i) The Resource refers to mineral salts (chlorides, sulphates and carbonates of sodium, calcium, magnesium and potassium) occurring naturally in soil and groundwater and to the quantity of salts added to soils which are repeatedly irrigated.

The candidate should also refer to the process of capillary action which draws salt-laden groundwater to the soil surface where it evaporates.

Award [5] for a detailed and thorough discussion of the causes of salinisation. Good use is made of Resource 3B.

Award [3]-[4] for a general but accurate discussion of the causes of salinisation. Reasonable use is made of Resource 3B.

Award [1]-[2] for a limited discussion of the causes of salinisation. Little relevant use is made of Resource 3B.
(ii) The candidate must make use of both the Resource and their own case study material. An answer based solely on the resource would be confined to Level 1 and a case study only answer would not attain Level 3. The answer should discuss both physical and human impacts of salinisation in relation to both the environment and people. An answer which does not address the synoptic aspects of the question should be confined to Level 1.

**Level 3 ([11]-[15])**
The candidate provides a detailed and thorough answer addressing all elements of the question. The candidate makes sound use of the Resource and presents detailed case study material in an assessment relating to the impact of salinisation on both the environment and people.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate answer addressing all elements of the question. Good use is made of the Resource and relevant case study material is used. The answer may become unbalanced with reference to either the environment or people becoming limited.

**Level 1 ([1]-[5])**
Candidate provides a limited answer which may fail to address either the environment or people. The answer may have no case study detail or the handling of the resource and case study is very limited. The answer may fail to address the synoptic nature of the question.

- pH: low (pH4 to 5 in the A or B horizons), acidity due to leaching
- colour: red, resulting from accumulation of iron and aluminium
- depth: very deep, from 3 to 30 m, as a result of rapid rates of weathering.

(b) Description

Stores: The proportion of nutrients stored as biomass is reduced while the soil store increases in importance and the litter store remains the same. Total storage is less overall.

Flows: While the inputs from rain and weathering remain the same, the outputs of leaching and run-off increase. Fertiliser is an additional input. The cycle changes with a reduction in the recycling of litter and an increase in uptake from the soil. The flow from the biomass is increased (more rapid) but much of this is removed as weeds and harvested crops.

Explanation

Stores: The replacement of the natural multi-layered forest ecosystem with a forest of a single species reduces both the total plant biomass and the other biomass (fauna) that may live on it. Soil storage increases through the artificial addition of nutrients to the soil as fertiliser.

Flows: The new flows of fertiliser and harvesting/weeding relate to the use of the ecosystem for production. The first increases the flow to the biomass and from it to the harvesting flow, and the second maintains the fall-out to the litter. Cultivation has no noticeable impact on the natural inputs but both outputs are increased ie leaching and run-off. The plantation trees are less efficient at intercepting and retaining rainwater so surface wash/run-off and downward leaching in the soil is enhanced.

Level 3 ([7]-[9])
Candidate provides a detailed and thorough description and explanation of the stores and flows of nutrients and clear reasoning for these changes is provided. One or two points may not be developed but the candidate demonstrates a sound knowledge of nutrient cycling and the impact of human interference.

Level 2 ([4]-[6])
Candidate provides a general but accurate description and explanation of the diagram and its changes but the description and reasoning are incomplete.

Level 1 ([1]-[3])
Candidates provides a limited description and explanation of the diagram; alternatively the candidate may not progress beyond description of some very basic changes.
(c) A specified area of tropical forest should be discussed. The candidate may either focus on various aspects of one sustainable management system or discuss a number of options. The dangers to this region (in particular to its resources, economy and people) if a sustainable form of management is not developed should be made clear. Global implications are valid but should not dominate the answer at this scale. An answer which fails to address the synoptic nature of the question should be limited to Level 1.

**Level 3 ([11]-[15])**
Candidate provides a detailed and thorough explanation of the need for sustainability and the candidate is aware of a range of implications if the issue of sustainability was not addressed. Candidate addresses resources, economy and people in their answer. Sustainable strategies are clearly evaluated with detailed use of relevant case study material.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate explanation of the need for sustainability but with little case study detail and/or a limited range of implications. Evaluation may be superficial. The synoptic element of the question is addressed.

**Level 1 ([1]-[5])**
Candidate provides a limited explanation of the need for sustainability. Case study material lacks detail. Very little of relevance, no specific location facts. Case study detail, if present, is limited or inaccurate. Evaluation is limited or may be absent altogether. The answer may fail to address the synoptic element of the question.
Option C: The Dynamic Earth

5 (a) An earthquake may cause a tsunami through a large and rapid vertical movement of the seafloor covering an area of many hundred square kilometres. The earthquake usually originates at the subduction zone of a destructive plate boundary. The key factors in determining whether or not an earthquake will cause a tsunami are the size of the earthquake and the depth of the focus. Earthquakes most likely to cause a tsunami will have a magnitude of 6.5 or more and a focus depth less than 50 kilometres.

Award [5] for a detailed and thorough explanation of how an earthquake may cause a tsunami.
Award [3] – [4] for a general but accurate explanation. Candidates who fail to refer to the magnitude and focus depth should be awarded [3].
Award [1] for a limited explanation lacking specific detail. [5]

(b) This is a destructive plate margin where one oceanic plate (Pacific) is being forced below the edge of the Eurasian plate. The linear volcanic activity and the shallow to deep earthquakes indicate the subduction and destruction of oceanic plate material in a Benioff zone beneath the Sea of Okhotsk. A cross sectional diagram is required here and it should show the plate movement of the denser (oceanic plate) beneath either an oceanic or continental plate.

The friction along and the eventual destruction of the plate in the Benioff zone should be clearly discussed and the movement of this material into the plate above or onto its surfaces as land based volcanoes or volcanic island arcs.

No diagram, Level 1 only, inappropriate plate margin Level 1 only.

Level 3 ([8]-[10])
Candidate provides a detailed and thorough explanation of the pattern of activity across the plate boundary. The sequence involved in the formation of the relevant landforms and tectonic events is explained and a clearly drawn cross sectional diagram is used to illustrate these processes.

Level 2 ([4]-[7])
Candidate provides a general but accurate explanation of the pattern of activity across the plate boundary. The explanation and or diagram are incomplete in conveying the subduction process.

Level 1 ([1]-[3])
Candidate provides a limited explanation of the pattern of activity across the plate boundary. Poorly drawn cross-sectional diagram. [10]
(b) Candidates assess the validity of the statement for all marks to be available. Reference to case study material is important. If no material is provided, then a maximum of Level 2. Expect candidates to discuss the main predictors of eruptions such as changing gas emissions, seismic activity and ground deformation which were monitored in their small scale case study. Candidates should show an awareness of the difficulties facing scientists, e.g. not all predictors are present in all eruptions; the need for a timely and accurate prediction. Answers which fail to address the synoptic element of the question should be confined to Level 1.

**Level 3 ([11]-[15])**
Candidates display detailed and thorough knowledge of the various indicators, their reliability and attempt to make an informed judgement on the validity of the statement given in the question.

**Level 2 ([6]-[10])**
Candidates demonstrate a general but accurate knowledge of predicting volcanic activity and the discussion is shallow and lacking in depth. Case study references lack depth and detail. A limited attempt is made to assess the validity of the statement given in the question.

**Level 1 ([1]-[5])**
Candidate’s knowledge of prediction techniques is weak and the discussion is very limited. Case study detail may be absent. The candidate fails to make any attempt to assess the validity of the statement given in the question.
Candidates can select any two hazards.

A: Air pollution due to high ash content. May cause roofs of buildings to collapse and cause humans breathing difficulties.

B: Pyroclastic flows will cause death and destruction to everyone and everything in its path. Reference may be made to the rapid nature of the flow and the high temperatures.

C: Lava flows can threaten property and destroy productive farmland.

**Level 3 ([5]-[6])**
Candidate identifies two environmental hazards and provides a detailed and thorough discussion on how they may cause loss of life and damage to property.

**Level 2 ([3]-[4])**
Candidate identifies two environmental hazards and provides a general but accurate discussion on how they may cause loss of life and damage to property. Answer may be unbalanced with greater detail provided on one environmental hazard.

**Level 1 ([1]-[2])**
Candidate identifies at least one environmental hazard and provides a limited discussion on how they hazard(s) may cause loss of life and damage to property.

(b) The easiest way to answer this would be with a cross sectional diagram but accept any diagram if it aids explanation. Key features which should be annotated include: constructive margin (plates diverging), convection currents in mantle, magma rising to surface. The explanation is straight from the theory of plate tectonics. Candidates are not required to name an example but labels may relate to a well known example eg Mid Atlantic Ridge.

**Level 3 ([7]-[9])**
Candidate provides a detailed and thorough explanation based on an appropriate diagram, fully annotated, which conveys a full understanding of the processes responsible for the formation of an ocean ridge.

**Level 2 ([4]-[6])**
Candidate provides a general but accurate explanation based on a diagram but annotation may be limited. An explanation is provided but it may be incomplete.

**Level 1 ([1]-[3])**
Candidate provides a limited explanation of the causal factors in the formation of an ocean ridge. Diagram is poorly annotated.
(c) Appropriate case studies are crucial in order to fulfil the key command to contrast the three factors affecting the management of earthquake activity. There are several ways this answer may be structured so do not necessarily expect all candidates to deal with the three elements of the question separately as there is some degree of overlap eg the stage of development includes a measure of wealth and access to financial resources will affect the knowledge of the earthquake activity and how people perceive this hazard. Answers which fail to address the synoptic element of the question should be confined to Level 1.

**Level 3 ([11]-[15])**
Candidate provides a detailed and thorough contrast of how knowledge, perception and stage of development have affected the management of earthquake activity. Appropriate case study material is used with sound level of detail.

**Level 2 ([6]-[10])**
Candidate provides a general but accurate contrast of how knowledge, perception and stage of development have affected the management of earthquake activity. Appropriate case study material is used but the detail given may be general or superficial. All elements of the question are covered but the answer may be unbalanced.

**Level 1 ([1]-[5])**
Candidate provides a limited contrast of how knowledge, perception and stage of development have affected the management of earthquake activity. Candidate may fail to address the specific requirements of the question. An answer which simply describes the impacts of two earthquakes would be limited to Level 1.

[15]  [30]
Section B

Decision Making Exercise

7 \textbf{Introduction: some guiding principles}

The ideas outlined in the \textit{Guidance on Content} section are lines of thought that candidates might take in their report. They are not to be seen as the definitive answer, though it is to be expected that the points outlined below will feature, if only in part, in most answers. When allocating marks look favourably on answers which:

(a) Avoid undue verbatim quoting from Resource Booklet and adopt a consistent style.

(b) Use the full range of the resource material appropriate to the task – particularly where it is provided in non-literary format such as the OS map, printed maps and photographs.

(c) Apply knowledge and concepts that are not specifically raised in the resource material, yet are both illuminating and relevant to the task.

(d) Maximise opportunities presented by the resource material.

(e) Appreciate that ‘bias’ might exist in resource materials which expresses particular views.

(f) Avoid undue repetition of the same answer material in different sections or, if overlap is unavoidable, present it in a fresh way.

(g) Back up points with specific detail, eg giving statistical information where it is provided rather than making vague statements when details are readily available.

\textbf{Guidance on content}

A \textbf{Introduction}

Briefly describe the project and explain its potential importance to the Republic of Ireland.

The Corrib natural gas field is located in the Atlantic Ocean, 83 kilometres off the west coast of Ireland. About 1.7 million cubic metres of gas is going to be available each year for about 15 to 20 years.

It is planned that the gas will be brought ashore at Dooncarton in Erris on the north coast of County Mayo (see Resource B). It will then be transported by pipeline to a €150 million gas terminal to be treated and cleaned before it can be piped further. Another pipeline will return waste produced at the terminal for disposal at sea.
The terminal itself will be located at Bellanaboy in north-west County Mayo, just east of the town of Belmullet. The terminal has 15 hectares of buildings including offices, warehouses, the gas terminal itself, and access roads and car parking areas. There will be a 22 m high radio mast and 40 m flare towers where excess gas will be burnt off. Additionally, there will be a ground flare with a stack of about 12 m.

It is claimed that this development is very important to Ireland’s economy as relatively cheap, reliable fuels are essential for any economy to do well. The Government argue that, because Ireland is quite far away from the main energy infrastructure in Europe, this makes it more important that energy resources in the country are fully exploited. Ireland has another gas field at Kinsale but this is becoming depleted. Over 80% of Ireland’s gas is now imported as shown on Graph 1. If Ireland continues to become more dependent on imports, this makes it vulnerable to shortages and to price rises.

Level 3 ([6]-[8])
The candidate describes clearly the proposed project and examines the impact such a development might have on Ireland’s economy. The points made will be consistently at a national scale or any points referring to the local scale will be used to support a national context.

Level 2 ([4]-[5])
The candidate makes fewer clear and correct points. There is little or no development of any point, but points made are valid. There may be an imbalance between the description of the project and the explanation of its importance, but both will be present.

Level 1 ([1]-[3])
The candidate presents little content and a lot of it is irrelevant to the project or to its importance. Some of the points made may lack validity.

Maximum [5] if only description or importance is discussed. [8]

B The Likely Impact

(i) Negative impact on the local environment and the responses of those in favour

Negative impact

It is planned that the pipeline will come onshore at Dooncarton. There are concerns locally that the high pressure pipeline will not be stable as it is being buried in peat. The gas will run through the pipeline at high pressure and, in peat that is already unstable (in 2003 there was a series of landslides on Dooncarton Hill with the flows of peat coming within 60 metres of some houses), this could prove a danger to the environment. Even the Irish government accept that there are no international codes for building pipelines in peat.
Another environmental danger is highlighted by Erris Inshore Fishermen’s Association. They are concerned about the return pipeline discharging concentrated saline water, mercury and other heavy metals into Broadhaven Bay. A number of north Mayo coastal communities are almost entirely dependent on inshore fishing for their livelihoods and discharges of chemicals into the sea could threaten the crustaceans and flatfish in the bay. These fishermen market their product successfully because it is from unpolluted waters. Any change in this would threaten the shellfish and flatfish populations.

An additional worry is the deposition of the 600,000 cubic metres of peat removed from the site at Srahmore. This consists of a sloping site dug-over blanket bog. There is little information as to how very wet peat can be kept in place in such a site. As peat can act like a liquid and become fluid and as Mayo gets rainfall on average 200 days each year, it could be that the retaining walls would be unable to hold back the semi-liquid peat. As David Ball, an independent hydrogeologist, has said, there are concerns about “securing, in perpetuity, over half a million tonnes of broken-up peat in a peat slope above a main road across north-west Mayo”. A landslide of the peat would damage the road and risk lives.

The proposed development will also pose a threat to the visual environment. It is a massive complex situated on a bogland hilltop and will appear totally out of place here. The narrow strip of conifers will be insufficient to screen it. In any case the view from the local road leading from Bangor is entirely open. Approaching from the west everything that is over 10 metres tall would be visible. As there are many features taller than this (8 storage tanks of around 13 metres, a flare tower of 40 metres, a high turbine exhaust stack of 20 metres, a telecommunications mast of 21 metres, a ground flare of 10 metres and a maintenance building of 12 metres for example), it is clear that this development will completely change this rural environment. This complex will also be lit up at night, increasing the negative impact on the environment.

**Responses**

Mayo is an important tourism destination. However the proposed development is not close to any of the major attractions in the county and so the construction will not have an impact on it.
The landscape around the proposed terminal is undulating peat moorland and acidic grassland which is poorly drained. There are also large plantations of non-native conifers. The site was chosen partly because the existing conifers will provide screening of the development without having to wait for trees to grow to reduce the visual impact – they already exist as a dense and tall evergreen screen with an average height of 7 metres. The terminal itself will have a base lower than that currently as an average of 3 metres of peat will be removed, and this means that the existing trees will be even more effective at screening the site. There will also be a lot of care in the design, layout and colouring of the different parts of the development. Most of the terminal will therefore not be easily spotted in the landscape.

The gas received by the terminal will have in addition condensate, water and methanol. The methanol will be recovered and returned to the Corrib gasfield so that it can be re-used. The condensate will also be recovered and will be used as fuel in the terminal. The waste water will be treated before it is discharged to the sea at Doonhaven Bay so that pollution will be kept to a minimum.

During the construction there will be some additional traffic movements and noise. However this will affect only a small localised area.

Level 3 ([8]-[10])
Candidate states clearly the main argument and response. Two or more different factors should be discussed. The account will have many of these characteristics:

- The points made will be consistently relevant to the local environment and will be logically structured.
- The ideas will demonstrate insight and a level of sophistication.
- Clear understanding of all concepts will be demonstrated.
- Use will be made of most of the relevant resource material – no significant points will be omitted.
- Figures, where available and appropriate, will be used to good effect.
- Ideas will be expressed clearly and effectively.
Level 2 ([4]-[7])
Candidate will have fewer lines of thought or discussion may be limited. However, while ideas may lack depth, they are still adequate. There may be a heavy imbalance between the two sides of the argument. The account may show deficiencies in the following ways:

- Understanding displayed but an over-reliance on verbatim quoting even though appropriate.
- Resource material used but some information not as well exploited as it could be.
- Largely related to the question but some irrelevant material introduced.
- Ideas not expressed particularly logically or clearly.

Level 1 ([1]-[3])
- Simple understanding demonstrated but sketchily dealt with.
- Some use made of the resource material but many relevant resources omitted.
- Little or no structure or logic in the ordering of content.

(ii) The possible positive and negative impact on the local economy in the area

Possible positive impact on the local economy

Mayo is an area that needs a development such as this. The population decline of over 5% in Belmullet Rural District between 1996 and 2002 is one indication of the difficulties of the area as people move away to towns and cities in search of economic opportunities. There are also other measures of deprivation which indicate that the area is in need of economic stimulation. The area is also significantly deprived. The Rural District is in the top 10% most deprived areas in Ireland with much higher than the national figures of unemployment. Belmullet Rural District has an unemployment rate of 12% compared to the whole of Mayo which has just 5%. The rate in the whole of the Republic of Ireland is just 4.5%. Knocknalower is infamous as an employment blackspot in Mayo and had over 40% unemployment in 2002.
This gas terminal and pipeline will bring increased income to this deprived area. This is particularly important in those times of year when there are few tourists. As of June 2007, there were almost 400 people employed locally in Co. Mayo on the Corrib Project. Seven hundred people will be employed during the construction phase. While some of these will have specialist skills and will have to be brought in from outside the area, there will be considerable local direct and indirect employment. The impact of such employment will also have an effect on the local economy indirectly. During the building of the pipeline and terminal local services providers will have great opportunities. The Corrib gas field project has already pumped an estimated €2,000,000 into the local economy by spending on local goods and services. When the development really gets going that figure is bound to increase. Experience from other areas where gas terminals are located is that other industry and enterprises will follow. Overall, the Corrib Natural Gas project is the largest investment ever in Co. Mayo.

Those specialists brought in from outside the area will stay for only one year after the gas is first produced and, following their departure, this will provide further opportunities for jobs for local people. When the terminal becomes operational it is planned that 100 full-time jobs will be created. The effects of this on the local economy will be much bigger than this relatively small figure would suggest because of the deprived nature of the area. Furthermore the direct jobs in the terminal, the money in wages and the benefits to local services will put money into the local economy and will help to produce other indirect jobs locally.

Many local people welcome the proposal. For example, Gerry Coyle, a councillor for Belmullet, says it will “bring greater prosperity to Erris.” Central government also see enormous potential. The minister says “Corrib Gas also offers significant jobs potential, both in the initial construction phase and downstream applications in the coming years”.

Possible negative impact on the local economy

This development could reduce tourism in this part of County Mayo. Tourism in Mayo earned £57 million in 1999. While this is less than that earned in urban areas such as Galway, which earned £169 million, in Mayo they are increasing while in Galway they have been largely static since 1997. In addition the £57 million earned in such a rural area will have a greater impact on the economy of a largely rural area such as Mayo. In Erris, where the development is planned, tourism is even less developed than in other parts of Mayo. However its economic
role is increasingly important. Tourists value three main things about Erris:

- the scenery
- the wild and unspoiled nature of the landscape
- the friendly people

All of these are under threat from the development and this in turn will threaten the economy of the area. Tourists mostly visit Erris to enjoy outdoor and cultural activities and they say that they do not want to see major changes to the area. This proposal will produce major change to this unspoilt area and will provide economic growth in the short term as the natural gas will only last for 15 to 20 years. In that time the development may destroy the unspoilt image of the area permanently and reduce the possibility of tourism providing sustainable economic growth in the area.

Local fishermen are represented by Erris Inshore Fishermen’s Association, and they do not object to the development of the gas field. However they are concerned that the proposed pipeline discharging into Broadhaven Bay would pollute the fishing areas with mercury and other heavy metals, threatening the crustaceans and flatfish populations. Some north Mayo coastal communities almost entirely rely on inshore fishing for their income. One local firm – Porturlin Shellfish – markets some of their products as “from the clear unpolluted waters off the west coast of Ireland”. This may no longer be possible. In fact if the shellfish are contaminated by sea pollution, the fishery will eventually have to close, losing 90 jobs directly, and affecting the families of those people indirectly. In 1998 the value of fish landed in the area was well over half a million pounds so the impact on the local economy of this closure would be very great.

That there is a need to develop the economy of this part of Erris is agreed. However it is not at all clear that the gas development will achieve this. Some argue that there will be few benefits to the area around the terminal if the development were to be permitted. While the proposal may bring a gas terminal and pipeline to west and north-west Ireland, that is not the same as bringing relatively cheap gas to the area. If such a cheap fuel were to be available that might attract inward investment and thus the price might be worth paying. However it appears that the local area will not benefit from cheap gas, except for the urban areas of Galway city and Ballinasloe to the extreme south of the region. This will not benefit people from Knocknalower, one of the unemployment blackspots of Mayo, in itself an area of low employment. The terminal and pipeline is designed to remove gas from the local area and will benefit those places with a gas distribution network already or those areas which plan to develop one.
There is an argument that this is not the time to be exploiting the
gas in any case. An Irish environmental group, FEASTA, argue
that with two gas interconnectors between Ireland and Britain,
there are no threats to gas supply to Ireland in the near future.
This will therefore bring limited benefits nationally and, as a
consequence, the local economy of Erris has very little to gain
from such a scheme.

**Level 3 ([8]-[10])**
Candidate states clearly the main argument and response. **Two**
or more different factors should be discussed. The account will
have many of these characteristics:

- The points made will be consistently relevant to the **local**
economy or, where material is related to a larger scale, the
local relevance is emphasised and the points are logically
structured.

- The ideas will demonstrate insight and a level of
sophistication.

- Clear understanding of all concepts will be demonstrated.

- Use will be made of most of the relevant resource material –
no significant points will be omitted.

- Figures, where available and appropriate, will be used to
good effect.

- Ideas will be expressed clearly and effectively.

**Level 2 ([4]-[7])**
Candidate will have fewer lines of thought or discussion may be
limited. However, while ideas may lack depth and/or detail,
they are still adequate. There may be a heavy imbalance
between the two sides of the argument. The account may show
deficiencies in the following ways:

- Understanding displayed but an over-reliance on verbatim
quoting even though appropriate.

- Resource material used but some information not as well
exploited as it could be.

- Largely related to the question but some irrelevant material
introduced.

- Ideas not expressed particularly logically or clearly.
Level 1 ([1]-[3])
- Simple understanding demonstrated but sketchily dealt with
- Some use made of the resource material but many relevant resources omitted
- Little or no structure or logic in the ordering of content [10]

C The decision and its justification

The recommendation may overlap with some of the points made by the candidates with regard to the environment and the local economy, or some new material may be introduced. However, the emphasis here is different. A decision based on the greater overall benefits of one option over the other is what is required here, together with a justification of the selection made. Candidates can balance, for example, economic benefits against potential environmental damage in this section. No mark for stating a decision alone without a justification.

Level 3 ([8]-[10])
Candidate states clearly his/her decision. A range of reasons are given in justification. The account will have many of the following:

- Preference is clearly stated.
- Points made are consistently relevant and logically structured.
- Links are made between diverse aspects of resource material, not possible in B.
- There is a clear grasp of the concepts used.

Level 2 ([4]-[7])
There are fewer lines of thought or discussion, but what is here is relevant and correct or supportable in what is argued. There may be deficiencies such as:

- Too much verbatim quoting.
- Important sections of resource material not utilised.
- Irrelevant material introduced.
- Ideas not expressed particularly clearly or logically.
- Understanding of concepts not always clearly demonstrated.

Level 1 ([1]-[3])
- Few lines of thought and sketchy in detail.
- Large gaps in the use of resource material.
- Little or no structure or logic in ordering of content. [10]
Format

Clear format headings throughout [1]
Clear sub-headings in Section B [1] [2]

Role

Role adopted [1] [1]
and maintained [1] [1] [2]

Graph

Reference in report [1]
Appropriateness of the technique used [1]
Accuracy of the data presented [3]
Conventions (key, labelled axes, title) [3] If wrong table of data is used, [3]
maximum [5] ie no accuracy marks [8]
[50]