



## External Assessment Report 2009

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Subject	Managing Environmental Resources
Level	Higher

**The statistics used in this report are pre-appeal.**

**This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published question papers and marking instructions for the Examination.**

# Comments on candidate performance

## General comments

The question paper was far-ranging and well illustrated, covering the content outlined in the arrangements document in an interesting and challenging way. It included environmental issues relating to resources and energy in an eco-house, aluminium processing and waste management as well as land management in relation to forestry, urban issues in Inverness, and explored knowledge of basic biological concepts and legislation.

All questions in the paper were similar in standard to previous years and accessible to candidates. The quality of answers throughout the paper was good and essay writing showed some improvement. In answering certain questions, candidates indicated a very positive attitude to, and understanding of, current environmental issues.

The vast majority of candidates coped well with Section A of the paper, ie the structured questions. The average score for each question in this section of the paper was at least 50% of the marks available. As a result, most candidates achieved 50% of the marks or over in Section A of the paper. Discriminating questions in this section of the paper functioned appropriately.

Performance in problem solving and data handling questions continues to improve, particularly for candidates from Further Education centres, indicating that perhaps more attention is being given to these areas of the Course as a result of previous feedback to centres from the Principal Assessor.

Questions requiring discrete factual information, as detailed in the Course arrangements, still prove difficult, indicating that candidates may benefit from a more structured revision of terminology throughout the course. Published marking instructions may be useful to centres in this respect, in that they provide concise definitions, eg biological terms or exemplification of legislation. Marking instructions for previous years' question papers are available to download through the MER subject page on SQA's website.

In Section B, the essay questions, there was noted improvement in the presentation and standard of English. Candidates are in the main formulating essays containing relevant factual information. Good candidates did well in both essays, often attaining marks in double figures. The greater majority of candidates attempted both essays. Only five candidates did just one essay and only one candidate failed to attempt the essay questions at all. The performance of these latter candidates was generally borderline and they may have benefited from support with essay writing skills.

Question 8B and 9B were attempted by more candidates than the alternatives. Unusually this year, candidates achieved more marks in the unstructured essay questions.

The total marks attained by candidates ranged from 30 to 97 out of a possible 110.

## Areas in which candidates performed well

Candidates performed well in questions 1, 2, 5, 6 and 7. These questions ranged across the three topic areas of the MER arrangements.

Candidates demonstrated good knowledge of

- natural resources, domestic energy and SEPA (question 1)
- acid rain (question 3)
- soil sampling, abiotic factors (question 4)
- food web related questions and population monitoring (question 5)
- social and economic benefits, conflicts, access and National Parks (question 6)
- transport issues (question 7).

In addition the data handling aspects of questions – calculations, graph drawing, making predictions and interpretation of information – in questions 1, 2, 4, 5 and 6 were well done.

In the essays, two-thirds of the candidates favoured question 8B on population dynamics over 8A on feeding relationships, and by far the majority of candidates selected essay 9B on power generation, its conflicts and impacts rather than 9A, management of aquaculture, its conflicts and impacts. Attempting both essays is essential to reaching grade boundary marks in the examination. This should be emphasised when training candidates in essay writing.

## Areas which candidates found demanding

In Section A the following knowledge based areas of the course proved difficult for a number of candidates:

- Use of the comparative eg thicker insulation (question 1(a)(iii))
- Explaining the advantage of using solar power (question 1(a)(v))
- The polluter pays principle and life cycle assessment/analysis (question 2(a)(2)(b))
- Understanding the difference between a ‘major’ source of energy and renewables, which are for the most part ‘minor’ sources at present (question 2(d))
- Use of the advantage ‘cheaper’ in relation to energy sources (question 2(d))
- Giving precise exemplification of waste management in other countries (question 2(e))
- Qualifying the word ‘pollution’ with a specific reference (question 3(c))
- Basic biological knowledge of Tullgren funnel (question 4(a)(i)) and detritivores (question 4(b)(iv))
- Knowledge of soil profiles and the development of soil (question 4(c))
- Knowledge of legislation (question 6(b))
- Discriminating between social and moral pressures (question 7(c))
- Environmental Impact Assessment (question 7(e)).

In relation to problem solving and data handling type questions candidates found difficulty with question 3.

Once again some candidates did not provide enough detail in essays. Some sections were poorly done because of lack of demonstrated knowledge of underlying biological principles and relevant exemplification. These were:

- Food pyramids and symbiotic associations (question 8A)
- Predator/prey relationships and density dependant factors (question 8B)
- Illustrating ‘conflicts’ and positive impacts on the environment and local community (question 9A and 9B).

## Advice to centres for preparation of future candidates

All presenting centres should be congratulated on the support given to candidates in preparing for this examination, particularly those presenting at this level for the first time. Very few questions were not attempted and many were answered with extended answers that indicated the wide scope of the candidates’ knowledge and interest in environmental issues.

Centres appear to have followed previous advice regarding the preparation of candidates for problem solving and data handling questions and improved responses to essays were noted. The presentation of graphs showed a marked improvement. Fieldwork should be encouraged as one method of teaching some of the coursework. Soil as an ecosystem is included in the MER specification for study in a practical way, while land use studies allow for field excursions to enrich candidates’ knowledge.

The following points may help with the preparation for future candidates.

- The current SQA arrangements document for MER includes the specification of areas of knowledge and detailed facts, including suitable exemplification, that the candidate must know for the external examination. However, the nature of this subject is such that many alternative examples can be used and are acceptable as answers in the examination, eg use of the terms carbon positive/carbon footprint
- The order of presentation of questions in Section A of the paper generally follows the pattern of the topics presented in the MER arrangements. However the nature of environmental issues is such that there may be some overlap in questions
- Questions may contain both knowledge and understanding and problem solving, eg question 2 in the 2009 paper
- Where questions include information as a passage, diagram or table, candidates should not expect all of the answers to come from that information unless this is precisely stated, eg “from the food web...”, “from the flow chart...”
- The number of marks and lines allocated for an answer indicate the expected level of response. Too often candidates give minimal answers and drop a mark
- Candidates must be prepared to ‘describe’ by answering in a sentence and not give a one-word answer
- Candidates should be given practice with questions which begin with explain/compare and explain/describe and explain, as these prove difficult for many candidates in the examination
- Practice should also be given with numerical problems such as percentage change, graphs and ratios. Note that scales on graphs should be inclusive and normally start on each axis with a zero
- Many areas of the coursework topics lend themselves to review by essay. Practice in essay writing is essential
- Candidates tend to do better in structured essays where the pattern is set by sub-headings. All parts of this essay should be attempted. Candidates should be encouraged to adhere to the sub-heading format when answering this type of essay
- Candidates have greater discretion over the content of unstructured essays which can be wide-ranging as long as the facts are related to the title. Candidates should be encouraged to check the factual content of these essays to ensure that they include as many relevant facts as possible and that each aspect of the essay has been addressed, eg question 9A in the 2009 paper – management , conflicts, impacts – positive and negative, on both environment and community
- SQA past papers, marking instructions and NABs provide precise definitions and exemplification, giving a good indication of the knowledge base required by candidates.

## Statistical information: update on Courses

Number of resulted entries in 2008	135
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Number of resulted entries in 2009	126
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## Statistical information: Performance of candidates

### Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark - 110				
A	26.2%	26.2%	33	77
B	23.8%	50.0%	30	66
C	31.0%	81.0%	39	55
D	5.6%	86.5%	7	49
No award	13.5%	100.0%	17	-

## General commentary on grade boundaries

- While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.
- Each year SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the management team at SQA.
- The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- Where standards are comparable to previous years, similar grade boundaries are maintained.
- An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions, and the mix of questions are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in say Higher Chemistry this does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related as they do not contain identical questions.
- SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.