Course Report 2016

Subject	Environmental Science
Level	National 5

The statistics used in this report have been compiled before the completion of any Post Results Services.

This report provides information on the performance of candidates which it is hoped will be useful to teachers, lecturers and assessors in their preparation of candidates for future assessment. 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 assessment documents and marking instructions.

Section 1: Comments on the Assessment

Component 1: question paper
The paper contained a balance of both challenging and less challenging questions. All questions performed as expected and, as a result, there was no need to alter any grade boundaries.

Component 2: assignment
Performance continues to be on an upward trend compared to previous years.

There was evidence that centres had prepared candidates well for this component. Most candidates presented their report in an appropriate format, had used headings and had structured their report well. A wide range of topics were chosen, although some choices made it more challenging for candidates to gain marks. Some areas of the assignment remain difficult for candidates.

Markers commented that overall there seemed to be a clear understanding of what was required, particularly in terms of the layout and organisation of the report.

Candidates who followed the candidate guidelines tended to perform well. However, there was evidence that some candidates appeared to have been over-directed.

Some candidates selected data that was overly complex and proved to be beyond their processing capabilities and level.

For some candidates, literacy levels proved to be a barrier to accessing some marks, particularly where an extended explanation was required, eg describing application, effect and underlying environmental science.

Section 2: Comments on candidate performance

Areas in which candidates performed well

Component 1: question paper
Q1 (a)	This opening question was answered correctly by the majority of candidates.
Q1 (c)	Quality and accuracy of line graph was of a good standard.
Q3 (b)	Most candidates were able to complete the word equation correctly.

Q4 (b)	This was a selection/problem-solving question, and many candidates managed to gain the majority of marks here.
Q6 (d)	Nearly all candidates were able to gain at least one mark and 52% managed to gain full marks for this interpretation question.
Q7 (b) (ii)	Nearly all candidates were able to identify a material which could be recycled.
Q7 (c)	Candidates responded well to this question.
Q8 (a)	Ratios have created challenges to candidates in past papers, but centres have clearly been focusing on these, and candidates answered this particular question to a high standard this year.
Q9 (a)	Most candidates were able to identify a potential environmental issue associated with the construction of the railway.
Q9 (c) (ii) and Q9 (d)	This did not prove to be too demanding for most candidates.
Q11 (c)	Most candidates produced an accurately drawn pie chart which was labelled correctly.
Q12 (a) and (b)	These were generally answered quite well.

Component 2: assignment

♦ Most candidates stated an appropriate aim.

♦ Most candidates stated an application and effect, although markers reported that the application and effect weren't always clearly expressed or differentiated.

♦ Most candidates demonstrated knowledge of underlying environmental science, although for some it did not meet the depth of detail required to meet National 5 standard.

♦ Most candidates could select relevant information.

♦ Most candidates could present their selected data in alternative and appropriate formats.

♦ The majority of candidates provided references in sufficient detail.

Areas which candidates found demanding

Component 1: question paper
In general, where questions required recall of definitions eg Q1 (b), Q4 (a), 5 (b) (ii), Q9 (c) (iii) candidate performance was poor.

In some questions, eg Q1 (c) (ii), Q9 (b), Q10 (b), candidates had not read the instructions in the stem accurately. For example, in Q1 (c) many candidates were not awarded a mark because they did not include the term 'thousands' when referring to the numbers of buzzards.

In Q4 (c) (ii) candidates needed to give specific details about the differences between the lichens, and not merely a general observation.

For more extended answered questions, the literacy skills of the candidates tended to hamper their performance.

Component 2: assignment

♦ Some candidates failed to provide an appropriate title.

♦ Some candidates selected topics that, whilst appropriate, did not always allow them to easily identify the application, eg topics on invasive species.

♦ A few candidates submitted assignment reports that followed the format for an investigation (Task 1). As a result, they were unable to access many of the assignment report marks.

♦ Some candidates selected data that did not directly address the aim.

♦ Some candidates found difficulty in applying the terms 'relevance' and 'reliability' appropriately.

♦ Some candidates found difficulty in processing their chosen data accurately. This was sometimes due to the complexity of the data, or the degree of accuracy required to read and/or plot graphs and compile tables from data plotted on graph paper of an inappropriate scale. Some candidates attempted to plot graphs or charts on plain or lined paper rather than graph paper, which made it difficult to achieve the required degree of accuracy of plotting.

♦ Some candidates found difficulty in making a suitable comparison between their chosen pieces of data/information, or failed to state that no comparison was possible as they referred to different aspects of the topic.

♦ Many candidates found difficulty in drawing a valid conclusion that related to their stated aim and was supported by evidence in the report.

Section 3: Advice for the preparation of future candidates

Component 1: question paper
Candidates need to spend more time learning the mandatory knowledge of the course.

Candidates also need to be given the opportunity to practise past paper questions or exam-style questions to allow them to develop essential exam skills, such as reading questions with accuracy and responding in an appropriate manner to commands such as 'describe' and 'explain'.

Candidates should be discouraged from using bullet points when answering extended response questions.

Candidates should be encouraged to show the working of their calculations; especially where the question concerned has two marks.

It was apparent that a significant minority of candidates did not have the level of ability expected of a National 5 candidate. Centres should ensure they are presenting candidates at the appropriate level.

Component 2: assignment

Centres are advised to make sure they are using the most up-to-date version of the guidelines, and are encouraged to make the Candidate's Guide available to candidates.

Centres should also share the most recent marking instructions with candidates so that they know what will gain marks. However, candidates must not have access to these during the reporting phase.

Candidates should not be over-directed in their responses. If resource packs are provided, these should include a variety of resources/data which allow candidates to demonstrate that they have independently selected appropriate sources of data/information and then processed the relevant data/information. It is important that such packs contain a range of sources, possibly including 'red herrings', from which candidates can make their own selection of data/information. The experience for the candidate should replicate, as far as possible, being able to access websites, textbooks or journals, so the candidate has to choose the appropriate source and extract the appropriate data/information from the article, rather than the teacher/lecturer having pre-selected only the relevant table of data, graph, etc from the website, data sheet, journal, etc. Centres should not direct candidates as to which data/information within the pack that they should be choosing.

Assessors should not proofread completed reports for re-drafting.

Where candidates submit reports that have been electronically produced, centres should ensure that internet access is disabled during the report-writing phase.

Candidates should use information gathered in the research phase to produce their report. The report should be expressed in their own words. Candidates will not be credited for information copied directly from their research materials.

The choice of topic for the assignment needs careful consideration. It should not simply be an investigation. The topic must allow the candidate to state an aim and an application, and to explain the effect of that application. Where a candidate chooses to give multiple aims, these must all be addressed in the later parts of the report, eg conclusion.

Candidates must understand the difference between reliability and relevance, and include suitable reasons — it is not sufficient to simply state a resource was relevant or reliable.

A copy of the selected raw data/information must be included in the report and labelled as such.

Data should be selected carefully to ensure that accuracy can be achieved in the processed form. Over-complicated or highly detailed data can lead to inaccuracy in processing.

Processed data should be processed into a different and appropriate format using the advice in the candidate guidelines.

Where graphs are hand-drawn, candidates should be provided with graph paper. Candidates should ensure their graph is of an appropriate scale to allow markers to check the accuracy of plots. Where graphing packages are used, candidates should be able to use them correctly. Graphs should be of sufficient size to check the accuracy of plotting and have suitable scales and labels. Major and minor gridlines should be shown and data points should not be overly large.

A comparison between the two data sources is required. If they cannot be compared, a statement to that effect should be given along with an explanation as to why that is the case. It is not sufficient to simply state that the two sources cannot be compared.

Conclusions must relate to the aim and must be backed up by evidence in the report. If multiple aims are stated, the conclusion must address all of them.

References should be given in sufficient detail to allow them to be retrieved and checked by markers.

Grade Boundary and Statistical information:

Statistical information: update on Courses

Number of resulted entries in 2015	122

Number of resulted entries in 2016	194

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark -				
A	8.8%	8.8%	17	70
B	12.9%	21.6%	25	60
C	23.7%	45.4%	46	50
D	15.5%	60.8%	30	45
No award	39.2%	-	76	-

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.