**Stage 2 Earth and Environmental Science**

**Program 1: Assessment Type 3 - Earth Systems Study**

**Purpose**

This assessment allows you to develop and demonstrate your field observation skills and communicate your knowledge through an Earth Systems Study report. You will undertake an investigation into a particular local environmental issue, concern, initiative, or successful undertaking that can be linked to topics studied in Stage 2 Earth and Environmental Science.

You will develop a research question, then design, plan, undertake, and report on a field-based extended investigation to answer the question. The investigation must include collection and analysis of both primary and secondary data. You will need to be able to analyse the information gathered in terms of the interactions of two or more Earth systems.

**Description of assessment**

Proposal (IAE1) – Individually

You will design an investigation proposal then trial your methods to assist the design of your procedure. You may wish to collect your data independently or during one of the fieldwork excursions.

One draft of the proposal should be submitted for teacher feedback and approval. You may modify your proposal in response to teacher feedback before you undertake your investigation.

Your modified proposal is to be submitted with your report for assessment.

The proposal should include:

* a statement of an investigable question or hypothesis
* a rationale for and an outline of the proposed research approach and method
* a list of equipment required
* the procedure to be followed
* the type of data that will be collected
* a risk assessment that addresses safety, ethical, and legal considerations.

Report – Individually

The report should use scientific terminology and include:

* an introduction to identify the purpose, and relevant background or previous research into the topic (KA1, 4)
* appropriate representation of data, e.g. tables, graphs, maps, charts, photographs, or other illustrations (IAE2)
* analysis of the information gathered in terms of the interactions of two or more Earth systems (IAE3)
* evaluation of procedures and results to identify limitations of, and improvements to, the investigation (IAE4)
* a conclusion, which includes predictions or advice based on findings (IAE3)
* citations and referencing (KA4)

**Assessment conditions**

The combined word count for the proposal and the report should be a maximum of 2000 words, if written, or the equivalent in multimodal form.

Performance Standards for Stage 2 Earth and Environmental Science

| - | Investigation, Analysis, and Evaluation | Knowledge and Application |
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| A | Critically deconstructs a problem and designs a logical and coherent earth and environmental science investigation with detailed justification.  Obtains, records, and represents data, using appropriate conventions and formats accurately and highly effectively.  Systematically analyses and interprets data and evidence to formulate logical conclusions with detailed justification.  Critically and logically evaluates procedures and their effect on data. | Demonstrates deep and broad knowledge and understanding of a range of earth and environmental science concepts.  Applies earth and environmental science concepts highly effectively in new and familiar contexts.  Critically explores and understands in depth the interaction between science and society.  Communicates knowledge and understanding of earth and environmental science coherently, with highly effective use of appropriate terms, conventions, and representations. |
| B | Logically deconstructs a problem and designs a well-considered and clear earth and environmental science investigation with reasonable justification.  Obtains, records, and represents data, using appropriate conventions and formats mostly accurately and effectively.  Logically analyses and interprets data and evidence to formulate suitable conclusions with reasonable justification.  Logically evaluates procedures and their effect on data. | Demonstrates some depth and breadth of knowledge and understanding of a range of earth and environmental science concepts.  Applies earth and environmental science concepts mostly effectively in new and familiar contexts.  Logically explores and understands in some depth the interaction between science and society.  Communicates knowledge and understanding of earth and environmental science mostly coherently, with effective use of appropriate terms, conventions, and representations. |
| C | Deconstructs a problem and designs a considered and generally clear earth and environmental science investigation with some justification.  Obtains, records, and represents data, using generally appropriate conventions and formats, with some errors but generally accurately and effectively.  Undertakes some analysis and interpretation of data and evidence to formulate generally appropriate conclusions with some justification.  Evaluates procedures and some of their effect on data. | Demonstrates knowledge and understanding of a general range of earth and environmental science concepts.  Applies earth and environmental science concepts generally effectively in new or familiar contexts.  Explores and understands aspects of the interaction between science and society.  Communicates knowledge and understanding of earth and environmental science generally effectively, using some appropriate terms, conventions, and representations. |
| D | Prepares a basic deconstruction of a problem and an outline of an earth and environmental science investigation.  Obtains, records, and represents data, using conventions and formats inconsistently, with occasional accuracy and effectiveness.  Describes data and undertakes some basic interpretation to formulate a basic conclusion.  Attempts to evaluate procedures or suggest an effect on data. | Demonstrates some basic knowledge and partial understanding of earth and environmental science concepts.  Applies some earth and environmental science concepts in familiar contexts.  Partially explores and recognises aspects of the interaction between science and society.  Communicates basic earth and environmental science information, using some appropriate terms, conventions, and/or representations. |
| E | Attempts a simple deconstruction of a problem and a procedure for an earth and environmental science investigation.  Attempts to record and represent some data, with limited accuracy or effectiveness.  Attempts to describe results and/or interpret data to formulate a basic conclusion.  Acknowledges that procedures affect data. | Demonstrates limited recognition and awareness of earth and environmental science concepts.  Attempts to apply earth and environmental science concepts in familiar contexts.  Attempts to explore and identify an aspect of the interaction between science and society.  Attempts to communicate information about earth and environmental science. |