VCE Units 3 and 4 Environmental Science: Performance descriptors

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| **VCE ENVIRONMENTAL SCIENCE****SCHOOL-ASSESSED COURSEWORK** |
| **Assessment task: ‘Presentation of recommendations using evidence-based decision-making, including analysis and evaluation of primary data’** |
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| ***Unit: <insert>******Outcome: <insert no.>******<insert outcome statement>*** |  | **DESCRIPTOR: typical performance in each range** |
| **Key Science Skills** |  **Increasing levels of performance**  |
| ***Develop aims and questions, formulate hypotheses and make predictions*** | * States the problem or issue that will be explored through the primary data.
 | * Develops an aim or question that will be investigated.
 | * Explains why data is required for decision-making.
 | * Outlines how primary data will be analysed and evaluated to make recommendations about a problem or issue.
 | * Justifies further data that could be generated or collated to respond to the problem or issue.
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| ***Generate, collate and record data*** | * Records generated primary data to inform decision-making
* Records qualitative and/or quantitative data.
 | * Records generated primary data using provided tables to inform decision-making
* Identifies generated data as qualitative and/or quantitative.
 | * Constructs tables to record generated primary data to inform decision-making
* Distinguishes between the qualitative and quantitative data used. to inform decision-making
 | * Organises generated primary data into tables to inform decision-making
* Describes how the generated quantitative and/or quantitative data relates to the problem or issue.
 | * Selects relevant generated primary data to include in tables to inform decision-making
* Explains how the generated quantitative and/or quantitative data will be used in decision-making.
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| ***Analyse and evaluate data and investigation methods*** | * Identifies the data to be plotted on a graph.
 | * Labels graph axes including units.
 | * Plots data using a suitable scale.
 | * Uses a bar chart to present discrete data or a line graph to represent continuous data.
 | * Shows patterns or relationships between variables in graphs.
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| * Refers to a specific data point on a graph in the discussion of data
* States a pattern in tabled data.
 | * Compares specific data points on a graph in data analysis
* Describes a relationship or pattern from graphed data.
 | * Uses interpolation in data analysis
* Applies mathematical skills to analyse a relationship or pattern in data.
 | * Uses extrapolation in data analysis
* Identifies outliers when evaluating data.
 | * Extrapolates from data to make predictions with reference to decision options
* Accounts for outliers in discussing a relationship or pattern in data.
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| * Identifies an error or mistake in data analysis
* Identifies incomplete data.
 | * Distinguishes between errors and mistakes
* Identifies contradictory data.
 | * Distinguishes between random and systematic errors
* Suggests why incomplete or contradictory data may have been generated.
 | * Explains the effect of errors on data analysis
* Explains possible effects of using incomplete or contradictory data in decision-making.
 | * Suggests how errors could have been minimised
* Discusses how data quality could be improved.
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| **Construct evidence-based arguments and draw conclusions** | * States their own / others’ recommendation or decision.
 | * Supports their own / others’ recommendation or decision based on an opinion.
 | * Uses data to support their own / others’ recommendation or decision.
 | * Explains how their own / others’ recommendation or decision is supported by data.
 | * Discusses the limitations of data in evaluating their own / others’ recommendation or decision.
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| * Describes the current situation in relation to the decision to be made
* Lists advantages and disadvantages of different decision options.
 | * Suggests an immediate action in the context of the decision to be made
* Compares advantages and disadvantages of different decision options.
 | * Justifies an immediate action in the context of the decision to be made
* Provides a reasoned argument for a preferred decision option.
 | * Proposes short-term recommendations in the context of the decision to be made
* Ranks different decision options, explaining the criteria used to make decisions to identify viable options.
 | * Proposes long-term recommendations in the context of the decision to be made
* Evaluates viable decision options to determine a preferred option.
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| * Identifies an immediate impact of the recommendation or decision on the problem or issue in terms of scientific ideas.
 | * Compares impacts of the recommendation or decision related to the problem or issue in terms of scientific ideas.
 | * Explains the short-term impacts of the recommendation or decision on the problem or issue in terms of scientific ideas.
 | * Makes predictions about the long-term impacts of the recommendation or decision on the problem or issue in terms of scientific ideas.
 | * Discusses the implications for future decision-making of the recommendations or decisions on the problem or issue in terms of scientific ideas.
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| **Analyse, evaluate and communicate scientific ideas** | * Selects relevant data for analysis to inform decision-making.
 | * Organises data related to the problem or issue requiring a decision to be made or evaluated using environmental science conventions.
 | * Analyses data related to the problem or issue requiring a decision to be made or evaluated using environmental science language.
 | * Summarises advantages and disadvantages of different options related to decision-making using environmental science language.
 | * Presents recommendations or makes decisions using environmental science language.
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| * Identifies the science concepts associated with their recommendations or decisions
* Communicates their recommendations or decisions in language that is appropriate for the audience.
 | * Describes the science concepts associated with their recommendations or decisions
* Communicates their recommendations or decisions clearly.
 | * Makes links between the science concepts associated with their recommendations or decisions
* Sequences their communication of recommendations or decisions logically.
 | * Explains the relationships between the science concepts associated with their recommendations or decisions
* Selects relevant data and information to support the communication of their recommendations or decisions.
 | * Discusses the importance of the relationships between the science concepts associated with their recommendations or decisions
* Communicates the uncertainty associated with their recommendations or decisions.
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