

Subjects reviewed:

**Years 11 and 12**

Physics

Biology

Chemistry

Environmental Science

English

Geography

**Years 11 and 12**

In the descriptions below codes are provided to allow for easy identification of the reviewed documents when they are sourced from the web site.

**Physics**

11/12 SC766 B Physics and SC786 C Physical Sciences

**General comments:**

There are references to aspects of environmental Education in the following sections of the curriculum documents. These are mostly indirect references.

Learning Objectives

- *Understand the role which science plays in the social and economic context, through examination of the relationship of science to technology, the responsibilities of science in creating the future, and the ethical responsibilities of scientists.*

Knowledge and skills recognise the role of science in everyday situations (SC766 B Physics only)

Science and our society

*What is the place of science in creating the future? To what extent should scientists concern themselves with ethical considerations? Should science have other aims that depend on our values (e.g. political, religious, environmental, social)? How important should scientific understanding be to the ordinary citizen?*

Applications of science

*Science and technology: what is the relationship, more importantly, what is the difference? ...*

Criteria for assessment

*6. Understand the nature, history and methodology of science and apply scientific understandings to make judgments relating to the role of scientific technology in society.*

**Overall:**

Education for Sustainability rating



## **Biology**

Year 12 BY825 C Biology

Year 12 BY826 C Biology

### **General comments:**

None of the learning objectives is directly related to Environmental Education although there is an indirect connection in the following:

- *Develop an understanding of the processes occurring in biological systems and to be able to apply to a changing world.*

In the BY825C course, of the 6 central ideas and concepts, Energy and Materials is the only one with strong links to Environmental Education. This includes concept of energy flow, cycling of matter in ecosystems.

In the BY826C course, an extra key idea/concepts is included titled Interrelationships of the Organism and its Environment. Includes, concepts of population, habitat, niche, interreactions within a community, adaptations.

### **Overall:**

Education for Sustainability rating      ★

## **Chemistry**

11/12 SC755 B Chemistry

11/12 SC756B Chemistry

### **General comments:**

None of the learning Objectives is directly related to the environment although there is an indirect reference.

- *Understand the role which science plays in our social and economic context, through examination of the importance of science-based technologies;*

11/12 SC786 C Physical Sciences

Learning Objectives include

- *Understand the role which science plays in our social and economic context, through examination of the relationship of science to technology, the responsibilities of science in creating the future, and the ethical responsibilities of scientists;*
- *study factual material which will continue to be significant during the student's life through examining the chemical processes that are related to the properties and uses of substances, both natural and manufactured, which make up the student's environment.*

In the section called Science and Society students are asked to consider environmental issues.

*What is the place of science in creating a future? To what extent should scientists concern themselves with ethical considerations? Should science have other aims that depend on our values (e.g. political, religious, environmental, social)?*

## 12 CH856/855 C Chemistry

Learning Objectives include an indirect reference to the environment.

- *Develop understanding of the role of chemical science in the society in which they live, and its importance in placing in proper perspective the current conflicts between technological development and conservational restraint, and introduce students to some of the economic considerations which influence the development of industries and the use of alternative materials and processes;*

## English

Applied English 12 EN819/818 C

### **General comments:**

Within this subject there are some main contexts that allow for consideration of the environment: personal experience, the world of work and work-related issues, community life and issues, literature (both fiction and non-fiction) and the mass media.

The assessment includes an organised file of documents relating to adult life called the 'Future's File' which may include aspects of Environmental Education.

## Communication 11 EN614 B

This syllabus is designed specifically for students who need to develop and consolidate English Language skills essential to study and to effective participation in the community. The learning objectives include possible opportunities to include aspects of Environmental Education.

- *Read and comprehend information relevant to learning and everyday life;*

Since one emphasis is on using informational texts of the kinds typically used in other subject areas, Environmental Education information may be used.

## 11 EN617/616/615 B

Learning Objectives

Intended that students will

- *Read widely across a range of text types...;*
- *Read and view for information and understanding as well as for enjoyment;*
- *synthesise information and ideas from a variety of sources*

## 12 EN821/820 C

The following sections of the document provide opportunities to deal with environmental topic:

Learning objectives:

- *Read widely, across a range of periods, perspectives and types of texts;*

- *Develop awareness of text (both fiction and non-fiction) as socially constructed and ideologically framed*

#### Speaking and Listening

- *Present ideas, information, points of view or arguments, for a variety of purposes, in informal and more formal contexts*
- *plan, prepare and present oral presentations that meet the demands of particular contexts;*

#### Reading and Viewing

- *Read and view material for particular purposes...*
- *Engage in close study of prescribed classic and contemporary texts, for example through*
  - *Exploring issues and ideas and examining their relevance to contemporary society*
  - *Linking issues and ideas to their own experiences.*

#### **Overall:**

Education for Sustainability rating

Low

### **Environmental Science**

12 EV846 C Environmental Science

12 EV845 C Environmental Science

#### **General comments:**

The learning objectives encompass a range of aspects of Environmental Education.

- *Develop the knowledge skills and attitudes to enable humans to live sustainably within the Earth's environment;*
- *Become more aware of their own values and how these values and those of others affect all environmental decision making processes;*
- *Develop an awareness of how politics, the law, economics, technology and education all affect human use of the environment;*
- *Be more prepared to take personal responsibility for the future of the planet.*

The course deals with these in a thorough way, but there are few references to the last learning objective – personal responsibility – in the course outline or in the criteria for assessment.

#### **Overall:**

Education for Sustainability rating

★★

LEVEL	STRAND	<i>Units – direct</i>	About	Humans	Skills	Values	Action
		The unit is directly related to Environmental Education					
12	Core	Environment (natural and human)	*				
12	Core	Impact of human Activities on the Environment	*	*			
12	Core	Political, Legal, Ethical, Social and Economic Factors Affecting Management of the Environment		*		*	
12	Core	Appropriate Methods and Techniques to evaluate human impact on the environment and society		*	*		
12	Core	Apply Technological Solutions to Manage the Environment	*	*			
12	Core	Solve Environmental Problems	*	*	*		
12	Study	Water	*	*			
12	Study	Energy	*	*			
12	Study	Forests	*	*		*	

## Geography

### General comments:

11/12 GG730 B and GG731 B Geography

These courses are 10 years old and are traditional courses based around basic geographic skills and investigation of various geographic regions. No Environmental Education is evident.

12 GG833 C and GG832 C Geography

These are more recent courses. (1998, amended 2000)

In the subject description... *Geography, as a cross-curricular discipline, studies the world through investigating, mapping and interpreting natural and human patterns on the Earth's surface and the consequences of interactions between natural phenomena and human activity.*

Three of the thirteen learning objects are supportive of Environmental Education:

- *Appreciate the geographical aspects of environmental, social, political and economic issues and understand the global implications in such debate and the reasons for different points of view;*
- *Understand the impact of human activities in modifying natural systems and the constraints and potential of such human systems on human activity;*
- *Understand the potential of natural systems to support people and their activities sustainably;*

The core module: People and places has environmental aspects (see table).

The extension module has a high potential for the teacher to include aspects of Environmental Education as it is specified that the work must concentrate on current global, national, regional or local issues. Many of the suggested topics are environmental issues.

**Overall:**

Education for Sustainability rating



LEVEL	STRAND		About	Humans	Skills	Values	Action
		<b><i>Units – direct</i></b>					
		The unit is directly related to Environmental Education					
12	3	What have been the impact of people on these areas?	*	*	*		
12	7	What may be the number, distribution and needs of populations in the future and what may be their impact?	*	*			

LEVEL	STRAND		About	Humans	Skills	Values	Action
		<b><i>Units – opportunity</i></b>					
		The unit provides an opportunity for Environmental Education					
12	1	How many people are there and where are they located?	*	*	*		
12	2	Why are they located there?	*	*	*		
12	4	How are the numbers and location of people changing?		*			
12	5	How do these changes affect the characteristics of the population?		*			
12	6	What factors are causing these changes?		*			
12	8	How may the needs of changing populations be met?			*		



## **South Australia**

Key Learning Areas and subjects reviewed:

<b>Compulsory Years</b>	<b>Years 11 and 12</b>
Science	Physics
Society and Environment	Biology
Design and Technology	Chemistry
Health and PE	Enviro. Science
English	English
Mathematics	Geography
Arts	

### **Statewide Documents on Environmental Education**

*Environment: A handbook for teachers.* (1991). This handbook was prepared to support a policy paper of Environmental Education that was released in 1987. It contains classroom and outdoor activities which explore the various dimensions of Environmental Education across the curriculum.

Educating about, in and for the environment. (1995), Department of Education and Children's Services.

Sustainable Environmental Education. (1998). Department of Education, Training and Employment.

The SACSA Framework [Jan 2001] describes a single, cohesive Birth to Year 12 curriculum entitlement for all learners within children's services and schools. For further information on the SACSA Framework go to <http://www.sacsa.sa.edu.au>

Environmental Education is integrated throughout the SACSA Framework via the Essential Learnings and the Learning Areas.

The five Essential Learnings – Futures, Identity, Interdependence, Thinking and Communication – are understandings, capabilities and dispositions that underpin all learning in the SACSA Framework. While all five Essential Learnings foster Environmental Education, Futures and Interdependence are fundamental to sound Environmental Education.

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<sup>1</sup> Dispositions - emergent set of inclinations that we acquire/strengthen, that develop over a lifetime: relatively enduring habits of mind or characteristic ways of responding to experience across types of situations: shaped by the interaction of individual temperament and environment.

## Compulsory Years

### Science P-10

#### General comments:

This is a very strong Environmental Education course. There is a particular emphasis on sustainability, value clarification and personal actions.

There is strong emphasis on the Key Competencies

*... any curriculum planning should involve elements of science investigation, and study of the implications of science for people and our world.*

*regard for the consequences of decisions and developing a sense of connection and responsibility for the wellbeing of the living and non-living components of environments.*

In 'Working scientifically' students are expected to *use science to question the ways in which people are making changes to the natural and social worlds, and as a result take ethical action to create more just and environmental practices... and.... Learn how to take effective action towards the resolution of issues in their schools and communities.*

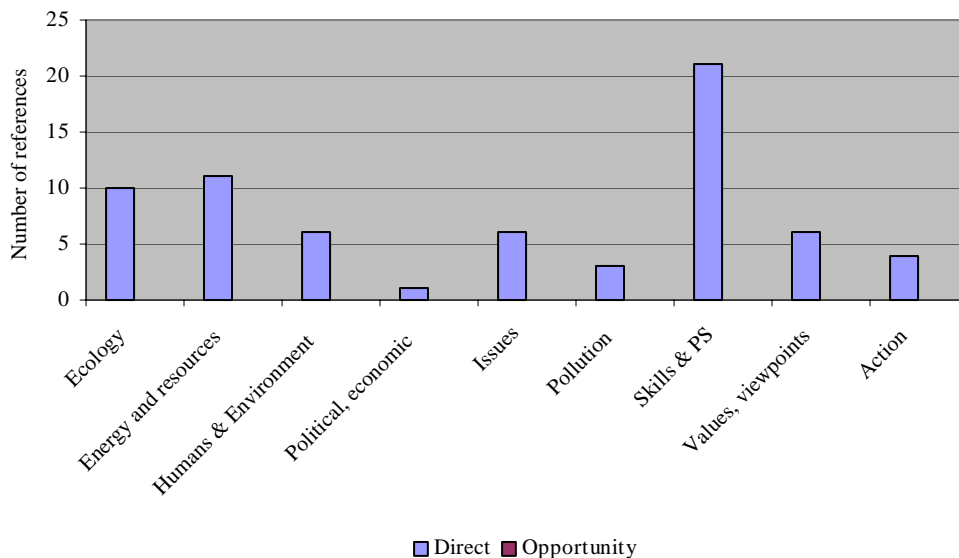
#### Overall:

% of learning outcomes with direct EE reference 58%

% of learning outcomes that provide opportunities for EE 0%

Education for Sustainability rating

★★★★



#### Strands/substrands

1 Life systems

2 Matter

- 3 Earth and space
- 4 Energy systems

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
1.1	3	Identifies and shares information about features of their natural and built environment that affect living things, including themselves.	*	*	*	*	*
1.3	4	Identifies sources of energy and describes the ways in which energy is used in daily life.	*		*	*	
1.5	1	Investigate the features and needs of living things, and demonstrates an understanding of their interdependence with each other and the physical world.	*	*	*	*	
2.1	3	Expresses ideas about changes that occur in their local environment and considers implications for sustainable environment.	*	*	*		
2.3	4	Identifies, plans and acts on ways in which they can better use energy in their lives.	*				
2.5	1	Explores relationships between living things by posing investigable questions about features and functions.	*	*		*	
2.6	1	Communicates understandings of life cycles and the importance of diversity for the future.	*	*	*		
3.3	4	Investigates and reports on patterns of energy use in the home, school and other places.	*		*		*
4.3	4	Investigates ways of obtaining, transferring and using energy (including from sustainable energy sources and from fossil fuels) for particular purposes.	*	*	*		
5.3	4	Analyses aspects of energy sustainability, including energy resources, energy production and distribution, and challenges for future 'worldwide' uses of energy.	*		*	*	
3.5	1	Explains the interrelationships between systems within living things, and between living things in ecological systems. They relate these ideas to the health of individuals and to threats to the sustainability of ecological systems.	*		*		
4.5	1	Investigates and explains the functioning of living systems from the microscopic to the macroscopic.	*	*	*		
5.5	1	Interprets and uses information about the structure and function of living systems and their relationships to survival of ecosystems.	*		*		
4.6	1	Explore how living things have changed over geological time and debates the value of species diversity and the ethics of human intervention.	*	*	*	*	
5.6	1	Applies theories and conceptual frameworks associated with evolution, biodiversity, genetics and the cycling of energy and matter in biological and physiological systems.	*		*		
3.7	2	Describe the structure of some common materials, explains how materials are used for different purposes, and understands their impact on the environment.	*	*	*		
3.8	2	Uses the changes in properties and uses of materials in product life cycles.	*	*	*		

5.8	2	Classifies chemical reactions and identifies their importance in providing materials for present and future generations.	*	*	*		
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		<b><i>OUTCOMES – part</i></b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
1.8	2	Identifies and predicts materials that change and do not change.		*	*		
2.8	2	Predicts, investigates and describes changes in common materials when acted upon in various ways.	*	*	*		*
4.4	4	Plans and evaluates investigations that focus on the transfer and transformation of energy.	*		*		
5.7	2	Uses the particle model to explain physical and chemical properties and change of matter.	*	*	*		*
4.8	2	Recognises and describes conditions that influence reactions or change in materials.	*		*		

## Society and Environment

### General comments:

The Introduction is explicit in the commitment to Environmental Education.

Time, Continuity and Change has reference in each level to Environmental Education. Place, Space and Environment is by far the most heavily Environmental Education weighted.

Society and Culture is variable with greatest Environmental Education reference in Senior Years.

Social Systems involves Environmental Education only – Middle and Senior Years.

Some concepts and Ideas were difficult to code. These are:

The skills of

- environmental observation, fieldwork, appraisal, analysis and action
- constructive and positive interaction with people and environments

A capacity to examine issues relating to values and attitudes in society, locally and globally, in order to enable learners to:

- critically examine and clarify the values and attitudes implicit and explicit in democratic processes, social justice and environmental sustainability

A capacity for socially responsible action:

- as a result of increasing awareness of living in an interdependent biosphere shared with all life forms,
- as learners develop social and environmental consciousness

Society and environment promotes three clusters of shared values.

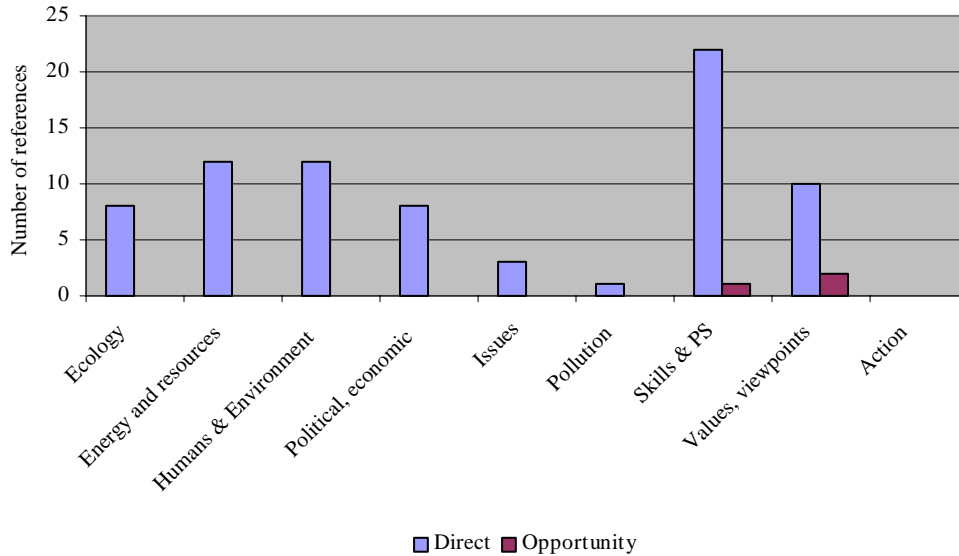
*Ecological sustainability such as: environmental stewardship and conservation: a commitment to maintaining biological diversity; and a recognition of the intrinsic value of the natural environment. These values contribute to learners' understanding of how*

*ecological sustainability can be achieved, in ways that redress environmental damage caused by past and present generations and safeguard the inheritance of future generations.*

**Overall:**

% of learning outcomes with direct EE reference 39%  
 % of learning outcomes that provide opportunities for EE 5%

Education for Sustainability rating ★★★



Strands/substrands

- 1 Time, Continuity and Change
- 2 Place, Space and Environment
- 3 Societies and Cultures
- 4 Social Systems

LEVEL	STRAND	<b>OUTCOMES – direct</b>					
		About	Humans	Skills	Values	Action	
		The outcome is directly related to Environmental Education					
1.3	1	Identifies and values aspects of environments, and of family and community ways of life, that have endured or changed, and makes predictions about the future in relation to these.	*		*		
1.4	2	Explains and communicates how people interact and identify with environments	*	*	*	*	
1.6	2	Participates actively in projects to show understanding of the importance of caring for local places and natural environments	*	*	*	*	
1.8	3	Listens to and retells local Aboriginal stories and stories from cultures other than their own, and explains their relevance for Australians	*	*	*	*	

2.4	2	Shows and reports on understanding of the interrelationships between natural and built environments, resources and systems	*	*	*		
2.6	2	Understands that people cause changes in natural, built and social environments, and they act together in solving problems to ensure ecological sustainability	*	*	*	*	
<b>LEVEL</b>	<b>STRAND</b>	<b><i>OUTCOMES – direct (cont.)</i></b>	<b>About</b>	<b>Humans</b>	<b>Skills</b>	<b>Values</b>	<b>Action</b>
		The outcome is directly related to Environmental Education					
4.1	1	Suggests and justifies reasons why groups of people in societies, countries or civilisations have undergone changes in wealth and/or their ability to sustain natural resources	*	*	*	*	
4.4	2	Describes places in Australia and elsewhere according to their location, natural and built features, and population and resources. Students explain interrelationships, including the effects of human modifications	*	*	*		
4.5	2	Hypothesises, then collects, records, organises and evaluates data from field-work, print and electronic sources, in order to analyse local and global, environmental or socio-economic issues	*	*	*		
4.6	2	Identifies and describes ways that places and natural environments are valued or threatened, and discusses strategies related to ecological sustainability	*	*	*		
5.4	2	Analyses and justifies personal views about similarities and differences between regions, in Australia and globally, identifying factors which shape dominant natural, sociocultural, political, economic and environmental contexts	*	*	*		
5.5	2	Reports on an issue related to people's sustainable use of resources or places, after critically analysing information from multiple sources and discussing the political implications of decisions	*		*		
5.6	2	Researches and evaluates plans for the development of a place or resource, and reports on outcomes on the basis of ecological sustainability	*	*	*	*	
5.8	3	Identifies and analyses complex social, cultural and environmental issues and strategies, including self-management and land protection, that are important to local and other Aboriginal peoples today		*	*	*	
5.1	4	Compares features of economies, in terms of power, equity and justice, in relation to how they impact on national systems, individuals and environments in poor and rich countries		*	*	*	
5.1	4	Critically analyses ways in which change can be achieved through political and legal systems and processes		*	*	*	
5.1	4	Critically analyses the ethical and non-ethical practices of powerful corporations or governments in relation to less powerful nations, and Indigenous and other minorities. They discuss and propose strategies to ensure preferred futures		*	*	*	

		<b>OUTCOMES – part</b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
1.5	2	Represents and categorises features of places and resources, using maps, contextual language and models	*		*		
2.3	1	Analyses aspects of people's lives and heritages in relation to broader social issues and events, and imagines future possibilities	*	*	*		
2.5	2	Uses symbols, maps, models and flow-charts to describe the location of places and demonstrate relationships	*		*		
5.1	1	Critically analyses different interpretations of events, ideas and issues, including an understanding of the relationship between power and historical representation	*		*		
5.7	3	Researches and evaluates plans for the development of a place or resource, and reports on outcomes on the basis of ecological sustainability			*	*	

		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
4.9	3	Researches and engages with others to enhance ethical behaviour in relation to the human rights of individuals and groups, within and across groups, cultures or countries				*	
4.1	4	Analyses differences between political, legal and social systems and people's rights and responsibilities, using personal and other examples				*	
5.2	1	Researches and analyses primary and secondary sources to contextualise, justify and act on the basis of their interpretation of an issue, event or pattern	*		*		

## English

### General comments:

There are no direct comments about Environmental Education, but in the Introduction an opportunity to consider aspects of Environmental Education is indicated.

*...They explore and engage with fictional, non-print and multimedia texts from diverse cultural perspectives, take pleasure in using these texts to explore ideas, and think imaginatively and critically about themselves, their world and the global community.*

### Overall:

% of learning outcomes with direct EE reference	0%
% of learning outcomes that provide opportunities for EE	38%

Education for Sustainability rating





Strands/substrands

- 1 Texts and contexts
- 2 Language
- 3 Strategies

LEVEL	STRAND	<b>OUTCOMES – opportunity</b>				
		About	Humans	Skills	Values	Action
		The outcome provides an opportunity for Environmental Education				
1.1	1	Listens to a range of texts to identify feelings, main ideas and events.	*		*	*
2.1	1	Listens to a range of texts to identify specific information about familiar topics and to respond to others' views.			*	
1.3	1	Reads and views a range of texts containing familiar topics and language and predictable text structures and illustrations and recognises the ways that texts are constructed to represent real and imaginary experiences.			*	
1.4	1	Composes a range of texts that include topics of personal interest, and some related ideas, and that can be understood by others.	*		*	
2.4	1	Composes a range of texts that include interrelated ideas and information about familiar topics and shows an awareness of different audiences, purposes and contexts.	*		*	
1.10	3	Experiments with strategies for planning, composing and presenting spoken texts for formal and informal situations.			*	
2.10	3	Uses strategies for planning, composing and evaluating a range of spoken texts to communicate with different community audiences.			*	
3.1	1	Listens to a range of texts to develop ideas, identify diversity of opinion and to consider the appropriateness of context, purpose and audience.			*	
4.1	1	Listens to a range of texts to examine Key Ideas and diverse opinions and to understand the effect of purpose, context and audience.			*	
5.1	1	Listens to a range of texts to analyse and compare complex ideas and diverse opinions and judge the effect of the interrelationship between context, purpose and audience.			*	
2.2	1	Produces a range of spoken texts about topics and events of personal and community interest for different school and some community audiences and purposes.	*		*	

3.2	1	Produces a range of spoken texts about topics and events of personal and community interest, for school and wider community contexts and audiences.	*		*		
<b>LEVEL</b>	<b>STRAND</b>	<b>OUTCOMES – opportunity (cont.)</b>	<b>About</b>	<b>Humans</b>	<b>Skills</b>	<b>Values</b>	<b>Action</b>
		The outcome provides an opportunity for Environmental Education					
4.2	1	Produces a range of spoken texts about topics, events and issues of personal, community and world interest and adjusts speaking for a wide range of contexts and audiences.	*		*		
5.2	1	Produces a range of spoken texts about specialised topics and current and future issues, and speaks appropriately in different contexts and for a variety of purposes and audiences.	*		*		
2.4	1	Composes a range of texts that include interrelated ideas and information about familiar topics and shows an awareness of different audiences, purposes and contexts.	*	*	*	*	
3.4	1	Composes a range of texts that include ideas and information about familiar and some unfamiliar topics and applies an understanding of audience, purpose and context.	*	*	*	*	
4.4	1	Composes a range of texts that include detailed information and explore different perspectives about a range of issues and adjusts texts for particular audiences, purposes and contexts.	*	*	*	*	
5.4	1	Composes a range of texts that include detailed information and explore different perspectives about diverse topics or issues and adjusts the text to produce an intended effect upon the audience.	*	*	*	*	
2.9	3	Uses strategies for listening attentively to ideas, information and viewpoints in a range of spoken texts.			*	*	
3.9	3	Uses and discusses a variety of strategies for listening attentively to summarise alternative viewpoints in a range of spoken texts.			*	*	
4.9	3	Uses and compares a variety of strategies for listening critically to diverse perspectives in a range of spoken texts.			*	*	
5.9	3	Uses and critically reflects on a range of strategies to listen analytically to diverse perspectives in a range of texts.			*	*	

## Mathematics

**General comments:**

Environmental issues frequently mentioned in the key ideas but then not always easy to see in the outcomes.

For example, in the introduction (p. 157): *A mathematics curriculum framework evolves and responds to the social and environmental demands of the times and developments within mathematics itself... Worldwide developments in mathematics curriculum include: ...working mathematically to empower the learner to engage critically with their physical and social environment.*

**Overall:**

% of learning outcomes with direct EE reference                      20%  
 % of learning outcomes that provide opportunities for EE            24%

Education for Sustainability rating    ★

Strands/substrands

- 1      Exploring, analysing and modelling data
- 2      Measurement
- 3      Number
- 4      Pattern and Algebraic Reasoning
- 5      Spatial Sense and geometric reasoning

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
1.5	2	Chooses and uses a variety of strategies to measure the size of a wide variety of figures, objects and events drawn from the world around them.	*		*		
1.1	4	Describes and represents situations from personal and family experiences and interaction with the environment where there is change over time.	*		*		
4.1	5	Identifies characteristics and properties of 2D and 3D shapes and understands how these have influenced the built environment		*	*		

		<b>OUTCOMES – part</b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
1.1	1	Generates and organises data and uses it to make personal and collective plans			*		
2.1	1	Poses questions, explores patterns, and collects relevant data. They record and represent the data, and also use data presented by the others.	*		*		

1.4	2	Compares and orders the measurable attributes of distance, surface, space, mass, turn/angle and time to describe the size of a wide range of familiar figures, objects and events.	*		*		
2.4	2	Chooses, estimates and uses metric units to measure attributes of figures and objects; orders events or cycles of events; estimates the duration and time of events; constructs and uses measuring tools; explains that all measurement is approximate	*		*		
3.4	2	Selects appropriate attributes and systems to measure for a variety of purposes and reports on how measurement is used in social practice.			*		
		<b><i>OUTCOMES – part (cont.)</i></b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
5.5	2	Applies a variety of techniques and tools, and manipulates formulae to solve and report on everyday and community problems.			*		
1.9	4	Recognises and constructs spatial and numerical patterns with concrete materials, continues these patterns and predicts what comes next.			*		
2.9	4	Searches for, represents and analyses different forms of spatial and numerical patterns, and relates these to everyday life.	*		*		
2.1	4	Uses materials, data and informal graphs to represent change.			*		
2.1	5	Uses positional language and measurements to formally map location and arrangements.	*		*		
3.1	5	Produces, uses and critiques scaled maps and plans and envisages alternative possibilities.			*		

		<b><i>OUTCOMES – opportunity</i></b>					
		The outcome provides an opportunity for Environmental Education					
2.2	1	Describes key features of data and draws conclusions from similar data from different groups. They make general predictions based on results.			*		
3.1	1	Poses questions, determines a sample, collects and records data including related data, represents sample data in order to investigate the world around them.			*		
4.1	1	Poses questions, appropriately designs a survey, collects data and classifies sequence, collapses, tabulates and represents the data with and without ICTs			*		
4.2	1	Reads and describes information in given tables, diagrams, line and bar graphs. Makes predictions based on the information, understanding the limitations of data interpretation and the possible social consequences of these limitations.			*		
5.1	1	Plans experiments and surveys, checks data for inconsistencies, and represents and reports on central tendency and spread of data.			*		

5.2	1	Displays and summarises data to show location and spread, while interpreting and critiquing collected and published data from a variety of sources and perspectives (describing distributions), and making comparisons, inferences			*		
2.5	2	Uses direct measuring strategies to represent, communicate and record measurements graphically in symbols with correct units and performs simple operations on measures			*		
4.4	2	Selects appropriate measurement units and scale to conduct collaborative research into issues associated with the social or physical world.			*		
1.6	3	Uses the base 10 number system and fractions to represent numbers when working with their peers, collections of objects, measurements			*		
2.8	3	Uses a variety of estimating and calculating strategies, including memorising addition and subtraction facts with whole numbers, and with money represented as decimals.			*		
		<b><i>OUTCOMES – opportunity (cont.)</i></b>					
		The outcome provides an opportunity for Environmental Education					
3.6	3	Represents and analyses relationships amongst number concepts and uses these to make sense of, and represent the world.			*		
5.7	3	Demonstrates and justifies understanding of the meaning of operations with numbers, and how they relate to each other in modelling growth and change.			*		
3.1	4	Uses mathematical representations to make connections and analyse change			*		
5.1	4	Uses a variety of mathematical models to make connections and analyse how things might change in both real and abstract contexts			*		
1.1	5	Uses key spatial features to describe and represent 2D and 3D shapes from personal and community activities.			*		
2.1	5	Compares and analyses relationships between and within 2D and 3D shapes and objects to represent their world.			*		
4.1	5	Identifies, represents and justifies one and two step geometrical transformations			*		

## Health and Physical Education

### General comments:

This is largely skills based program. The Health strand generally relates to safety issues. There is however awareness of conservation of the natural environment in the Introduction. *Significant processes of human development are involved in the formation of self-concept and the maintenance of various social and work groups and global communities.*

The Learning Area focuses on the significance and consequences of personal decisions and behaviours in the context of relationships, family, community and work environments.

**Overall:**

% of learning outcomes with direct EE reference 10%

% of learning outcomes that provide opportunities for EE 0%

Education for Sustainability rating ★

Strands/substrands

1 Physical Activity and Participation

2 Personal and social development

3 Health of individuals and communities

LEVEL	STRAND	<b>OUTCOMES – part</b>				About	Humans	Skills	Values	Action
		Some of the indicators used to describe the outcome point to Environmental Education								
2.6	3	Explains ways in which communities support their own and others' health					*	*	*	
5.4	2	Critically appraises the interrelationships of factors that influence growth and development, and ways of promoting healthy growth and development for themselves and others in the community and critically appraises the interrelationships						*	*	
4.6	3	Identifies health issues relevant to adolescence in their community and develops strategies to deal with those issues for self and others					*	*		
5.6	3	Critically analyses the immediate, short- and long-term consequences and the inter-relationships of behaviours that affect the health of communities					*	*		

## Design and Technology

### General comments:

The introduction contains the following statement.

*The use and abuse of technology can create social differences, disagreements and ethical conflicts. It is important to recognise technological practices as both beneficial and problematic, and that every technology can have both positive and negative attributes... To create a democratic global future sustained and shared by all people, regardless of sex, race, class, culture and ability, it is increasingly important that we examine not only our existing technologies but also the intentions behind the design of new ones. (p. 101)*

### Overall:

% of learning outcomes with direct EE reference 20%

% of learning outcomes that provide opportunities for EE 17%

Education for Sustainability rating ★

### Strands/substrands

1 Critiquing

2 Designing

3 Making

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
5.1	1	Examines critically the competing values embodied in designing products, processes and systems, clarifies relationships amongst people, products and quality of life and presents ethical analyses of various possible technological futures.		*	*	*	
3.5	3	Investigates the characteristics of materials and equipment used in design and production in order to achieve sustainability.		*	*		
4.5	3	Evaluates materials and equipment in order to meet principles of function, aesthetics and sustainability.		*	*	*	
5.5	3	Defends and applies choices made in using particular materials and equipment to create sustainable products, processes and systems.		*	*		
4.6	3	Analyses and applies the principles of good resource management, sustainability and duty of care in their design and making practice.	*	*	*		
5.6	3	Integrates the principles of good resource management and duty of care when creating sustainable products, processes and systems and assembles effective arguments to defend these principles.	*	*	*		

		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
2.1	1	Identifies a range of ways in which the design of everyday products, processes and systems is related to those who use them.	*		*		
2.4	3	Demonstrates effective use of a broad range of materials and equipment, and reflects on their personal interaction with resources they use.	*				
2.6	3	Identifies the reasons for managing resources effectively and for working in personally and socially safe and responsible ways.	*		*		
3.1	1	Describes the significance to diverse groups of people of the various criteria used in the design of particular products, processes and systems.			*		
5.2	2	Independently generates and manages design strategies to create ethically defensible products, processes and systems.			*	*	

## The Arts

### General comments:

There are some generalised outcomes that are related to Environmental Education.

Visual arts: *The exploration and expression of ideas through a broad range of approaches in visual images, forms and structures... underpinned by aesthetic, social, cultural and technological considerations.*

Arts analysis and response: p.90: *It leads them to question the way the arts work is constructed and the social and environmental relationships involved.*

Arts (primary years) introduction: p.9: *Artists influence the design of clothing and everyday objects in private and public life, and the look, sound and feel of interiors and exteriors in the built environment.*

### Overall:

% of learning outcomes with direct EE reference 20%

% of learning outcomes that provide opportunities for EE 23%

Education for Sustainability rating ★

### Strands/substrands

- 1 Arts practice
- 2 Arts analysis and response
- 3 Arts in contexts

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
1.5	3	Identifies examples of arts works from across each arts form that occur in everyday life within their own community and local environment	*	*	*		
5.1	1	Uses imaginative thought, and an analysis of arts practice, styles, forms and genre to create/re-create arts works within each arts form that explore social, cultural and/or environmental issues			*	*	

		<b><i>OUTCOMES – part</i></b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
1.3	1	Shares arts works from each arts form that express personal ideas and feelings and that convey meaning to known audiences/viewers		*	*	*	
2.3	1	Presents/performs arts works within each arts form to engage and influence a range of audiences/viewers, using sources of information beyond personal experience as inspiration		*	*	*	*
3.3	1	Works as an individual, or in groups, to present/perform arts works from each arts form that demonstrate an awareness of social, ecological and/or cultural issues to particular audiences/viewers		*	*		
4.6	3	Uses understanding of changing social and cultural beliefs, values and attitudes on the form, style and purpose of arts works made by artists/performers in different cultural settings, to inform research and practical tasks		*	*		

		<b><i>OUTCOMES – opportunity</i></b>					
		The outcome provides an opportunity for Environmental Education					
1.1	1	Confidently uses play and imagination to create/re-create arts works within each arts form.			*	*	
1.2	1	Explores skills, techniques and technologies from each arts form and engages in activities specific to each arts form to produce arts works.			*	*	
2.4	2	Demonstrates an understanding of the different messages and meanings communicated through performance/ presentation across each arts form, and uses specific arts terminology to communicate interpretations of their own arts works and those of others.		*	*	*	
1.6	3	Recognises arts works from across each arts form made by different cultural groups in both past and present times			*	*	
3.1	1	Uses thought, imagination, research and experimentation to create/re-create arts works within each arts form that convey meaning about issues within their community			*		
2.6	3	Considers the different styles and forms of arts works from different cultural settings and identifies the purposes for which these arts works were made			*		
3.6	3	Describes how their understanding of the artistic practice of individual artists/performers from different cultural groups impacts on their own arts works			*	*	

**Years 11 and 12**

**Physics stage 2**

**General comments:**

There are few references to Environmental Education in this subject.

For example:

In the Domains and Objectives, number 7. *Relate knowledge of physics to selected phenomena and applications.*

- Topic 4: Nuclear Fission and Fusion on P 3 discusses the advantages and the disadvantages of using the fission process to produce electricity.

**Overall:**

Education for Sustainability rating

**Biology****General comments:**

Stage 1 (Year 11)

The objectives of the course are process ones offering many opportunities for Environmental Education but little on sustainability.

Rationale ...*Students need to clearly assess the impact that these developments have on their lives, on society in general, and on the environment.*

One aim ...*Develop a concern and care for the environment so that its conservation is a major consideration when decisions have to be made;*

Stage 2 (Year 12)

Rationale... *This syllabus provides students with an opportunity to develop an understanding of basic biological concepts, to appreciate the interactions of organism with each other and the environment, and to see the links between advances in biology and the social issues that can arise from these advances.*

Aims ... *an awareness of the social implications of biological knowledge and technological advances in biology.*

Objective 7 ..*Students should be able to understand how knowledge of biology can be used to make informed decisions at the personal, social, and global levels.*

**Overall:**

Education for Sustainability rating



Domains Stage 1:Year 11

- 1 Acquiring biological knowledge
- 2 Understanding and problem-solving
- 3 Using biological knowledge

4 Communicating biological knowledge

Year 12 themes

- m Macromolecules
- c Cells
- o Organisms
- e Ecosystems

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
11	2.2	Demonstrate knowledge of a range of biological facts, and an understanding of biological concepts, principles, and theories, and relate them to natural and technological phenomena	*			*	
11	3.2	Recognise how the study of biology is a human activity that is developed and applied in a wide variety of contexts.		*		*	
12	m15.2	Know that the mutation rate can be increased by radiation, mutagenic chemicals, and heat	*	*			
12	c7.1	Know that the Sun is the main source of energy for life.	*				
12	c7.2	Understand that light energy can be used by some cells in photosynthesis	*				
12	c12.1	Discuss possible benefits and/or harmful effects of chemicals that human beings use		*			
12	o6.1	Explain the importance of photosynthesis in the conversion of light energy	*				
12	e1.2	Explain that populations in a community consist of different species, and know the characteristics that define a species	*				
12	e2.1	Give the functions of producers, consumers, and decomposers in a community	*				
12	e3.1	Describe how environmental factors may determine the type of the community	*				
12	e4.1	Explain why decomposers are essential in returning resources to the community	*				
12	e5.3	Know that the input and the output of energy on the Earth are almost equal	*				
12	e6.2	Explain why biodiversity is essential for the perpetuation of communities	*				
12	e10.1	Give example of species' extinctions that have been brought about by human activities		*			
12	e10.2	Explain the best way to preserve species habitat	*	*			
12	e11.1	Explain how the growth of the human population is placing huge demands on the resources of the biosphere		*			
12	e11.2	Explain why the exponential growth of the human population is not sustainable		*			

		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
11	1.1	Design investigations			*		
11	1.2	Undertake laboratory and/or field activities			*		
11	1.3	Obtain information from a variety of sources			*		
11	2.1	Critically analyse and evaluate information, procedures, and materials			*		
11	2.3	Apply their knowledge and imagination to solve a variety of biological problems			*	*	
11	3.1	Recognise how the power and limitations of biology shape and influence the quality of life		*	*	*	
		<b>OUTCOMES – opportunity (cont.)</b>					
		The outcome provides an opportunity for Environmental Education					
11	3.3	Use and apply their knowledge of biology to make informed, rational decisions, and to modify and transform the external world			*		
11	4.2	Develop a variety of communication skills			*		
11	4.3	Use their creativity and/or imagination to communicate about biology or biological issues.			*		
12	Skill	Describe a pattern or behaviour observed in a practical activity			*		
12	Skill	Use an information source (library catalogue, CD-ROM, Internet, etc.) to obtain information about a topic			*		
12	Skill	Write a practical report on an experiment, describing its purpose, procedure, results, and conclusions			*		
12	Skill	Report in writing on the design of a practical activity			*		
12	Skill	Write an essay on a selected topic, based on information from a variety of sources			*		

## Chemistry

### General comments:

The introductions in both the Year 11 and 12 documents contain strong statements supportive of Environmental Education:

*In the Year 11 rationale... it is important that students have sufficient knowledge and skills to help them make decisions, not only on issues such as health, safety and the environment, in which chemical knowledge plays an important role, but also in the allocation of society's resources, particularly in chemical research. ... it also allows students to develop more responsibility for themselves, their society, and the environment.*

One of the aims: *Develop a concern and care for the environment so that its conservation is a major consideration when they make social, economic, or political decisions that have a chemical perspective.*

One aspect of the Year 12 course is the awareness of the Social Relevance of Chemistry. Students are expected to: *Understand some of the impacts of chemicals on the environment.*

**Overall:**

Education for Sustainability rating



LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
1	3.1	Recognise how the power and limitations of science shape and influence the quality of life	*	*			
		<b>OUTCOMES – part</b>					
		Some of the indicators used to describe the outcome point to Environmental Education					
1	3.3	Use and apply their knowledge of chemistry to make informed, rational decisions, and to modify and transform the external world		*			
1	4.3	Use creativity and/or imagination to communicate about chemistry or chemistry-related issues		*	*		
2	1.3	Industrial Chemistry	*	*			
2	2.1	Energy Use and Sources	*	*	*		
2	2.2	Small Molecules	*	*			
2	2.3	Big Molecules and Lattices		*			
		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
1	1.2	Undertake laboratory and/or field work	*	*			
1	2.1	Critically analyse and evaluate information, procedures, and materials		*	*		

## Environmental Studies Stage 1

### General comments:

Rationale includes comments about sustainability and using a holistic, integrative approach to learning about the environment: *Environmental sustainability is a significant concept within environmental studies courses...*

The course contains three domains:

- Learning about Natural and Human Environments
- Learning and Operating in Natural and Human Environments
- Encouraging the Development of an Environmental Ethic for both Natural and Human Environments.

**Overall:**

Education for Sustainability rating

★★★

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
11		increase students understanding of environment, environmental processes, and the interdependence of natural and human systems.	*	*		*	
11		develop students' range of practical and decision making skills concerning the environment			*	*	
11		develop awareness of values and attitudes informed by an understanding of global and local environmental sustainability	*	*		*	
11		encourage students to become involved in decision-making and appropriate actions which will promote environmental sustainability	*	*	*		*

**English**

Two courses – English and English Studies are available to students. Teachers and students may create their own program in the English course, whereas the English Studies is assessed by examination and school course work.

**General comments:**

The open nature of the English course offers many opportunities for Environmental Education to be included into school programs.

At Year 11, one of the principles is to relate to, recognise and expand students' skills and experiences, and deal with those issues that affect all young people. The rationale includes... *English also challenges students to expand their horizons and to reflect, with increasing insight, on other issues and ideas...*

At Year 12, the Rationale, ... *Students are encouraged to regard a wide variety of texts as worthy of their interest and attention.*

One objective of the syllabus is that students should also gain a sense of the ways in which particular texts are used to make meaning, to define the world, and to define and attempt to control reality.

The prescriptive English Studies course provides more limited opportunities for Environmental Education.

**Overall:**

Education for Sustainability rating

★

## Geography

Two courses are provided – Geography and Geography Studies. The Geography course is developed and assessed at the school level, whereas Geography Studies is externally prescribed with 50% examination assessed and 50% school assessed.

Both courses emphasise ecological sustainability in their rationale.

### Geography general comments:

Both Stage 1 and 2 Geography statements have strong Environmental Education emphasis. The objects are grouped under the following three domains:

- Learning about natural and human environments
- Learning and operating in natural and human environments
- Encouraging an environmental ethic for both natural and human environments

Stage 1, one aim (under Values, Attitudes, and Actions) is to:

- *Heighten students' awareness of the need to develop values and attitudes, and to take appropriate action for local and global environmental sustainability.*

For this stage, teachers are encouraged to develop their own school programs and topics.

Stage 2 is presented by Inquiry Categories, which are the 'content' section of the syllabus.

### Geography Studies general comments:

*Geography Studies provides opportunities for students to recognise, appreciate, and understand different beliefs about the environment. This enhances students' perceptions of the environment and helps to clarify their attitudes and values.*

*Geography Studies encourages students to become aware, critical and active citizens in working towards ecological sustainability, social justice, and the democratic process.*

### Overall:

Education for Sustainability rating

★★★

LEVEL	<b>Geography – Domains</b>				
	About	Humans	Skills	Values	Action
1	*	*		*	
1			*		
1				*	*
LEVEL	<b>Geography – Inquiry Categories</b>				
	About	Humans	Skills	Values	Action
2	*	*			*
2	*	*	*	*	*

2	Patterns of Health and Disease		*	*		
2	Patterns of inequality	*	*	*	*	*
2	Patterns of water use	*	*	*		
1	Learning about natural and human environments	*	*		*	
2	Patterns of social disruption and change		*	*		
2	Patterns of tourism		*	*		

	<b><i>Geography Studies – core topic</i></b>					
	People and the Environment	*	*	*		
	<b><i>Geography Studies – option topics</i></b>					
	Population Dynamics		*	*	*	
	Rural Change	*	*	*	*	
	Urban Places		*	*	*	
	Coastal Zones	*	*	*	*	*
	Geographical Perspectives of Tourism		*	*	*	
	Environmental and Human-induced Hazards		*	*	*	



Key Learning Areas and subjects reviewed:

<b>Compulsory Years</b>	<b>Years 11 and 12</b>
Science	Physics
Society and Environment	Biology
Technology and Enterprise	Chemistry
Health and PE	English
English	Geography
Mathematics	
Arts	

The Curriculum Council's Curriculum Framework is the mandated reference for the development of learning programs for all phases of schooling in Western Australia. From 2004, it will be used for curriculum planning and quality assurance purposes by all school systems and sectors in Western Australia.

The analysis outlined in this report focuses on the WA Department of Education's Student Outcome Statements (published in their Outcomes and Standards Framework), which were prepared as a progress map for use in government schools only. These level statements of the Student Outcome Statements are not separate learning outcomes: they are descriptions, at eight levels of increasing sophistication and complexity, of the original learning outcome.

Whilst the Student Outcome Statements usually align directly to the Curriculum Framework's Outcomes, there are important differences. Some of the learning outcomes in the Curriculum Framework – particularly those with a strong values component – were considered by the Department of Education, in their work on developing Student Outcome Statements, as too difficult to sequence at eight levels. These outcomes do not appear, therefore, in the Student Outcome Statements. For example, 'Acting Responsibly' from Science and 'Technology Process' from Technology and Enterprise.

In response to a draft of the WA review, Rod Beresford (WA Curriculum Council) and Glen Bennett (Department of Education) made the following observations:

*The critical issue is that any curriculum mapping and analysis in WA should focus primarily on the Curriculum Framework. The key elements of the Curriculum Framework that should be included in this work are the Overarching and Learning Area Outcomes, the Core Shared Values and the Principles of Teaching and Learning.*

*The Curriculum Framework's Core Shared Values (including 'Environmental Responsibility' and 'Social and Civic Responsibility') are a 'key underpinning principle' of the document. These values have been woven through many of the Framework's learning outcomes. In some cases they are implicit in the outcomes and in others – as*

*with the Society and Environment learning outcome 'Active Citizenship' – the social justice and ecological sustainability values are clear and explicit.*

*The structure of the Curriculum Framework in itself provides teachers with the flexibility to legitimately provide Environmental Education at any phase of schooling in a broad range of contexts and subject areas. Schools have the freedom to choose how and when they should address environmental understandings, skills and values. The Curriculum Framework provides the focus for the planning of such programs without specifying how and when this should be done. Units of work or syllabuses are not prescribed for K–10.*

## **Statewide documents on Environmental Education**

*Draft Environmental Education Guidelines (1994).* This document defines environmental education in terms of understandings, skills, attitudes and values, and action. It proposes that environmental education issues and problems can serve as context for the achievement of outcomes from all eight learning areas. It provides a number of teaching approaches and themes.

*Environmental Education. A Discussion Paper (December 2000).* Contains a policy statement, objectives, strategies, outcomes and key targets for Environmental Education for the future. It is proposed that a comprehensive Environmental Education Strategy for Western Australia will eventually be developed.

## **Compulsory Years**

### **Science**

#### **General comments:**

*Support for Environmental Education can be found in the following statement: An appreciation of scientific knowledge, processes and values have the potential to help students build a more productive and ecologically-sustainable environment. It is important that students in Western Australian schools appreciate and understand how the study of science presents them with opportunities for responsible decision making in their local, national and global communities. (P219, Curriculum Framework)*

#### **Overall:**

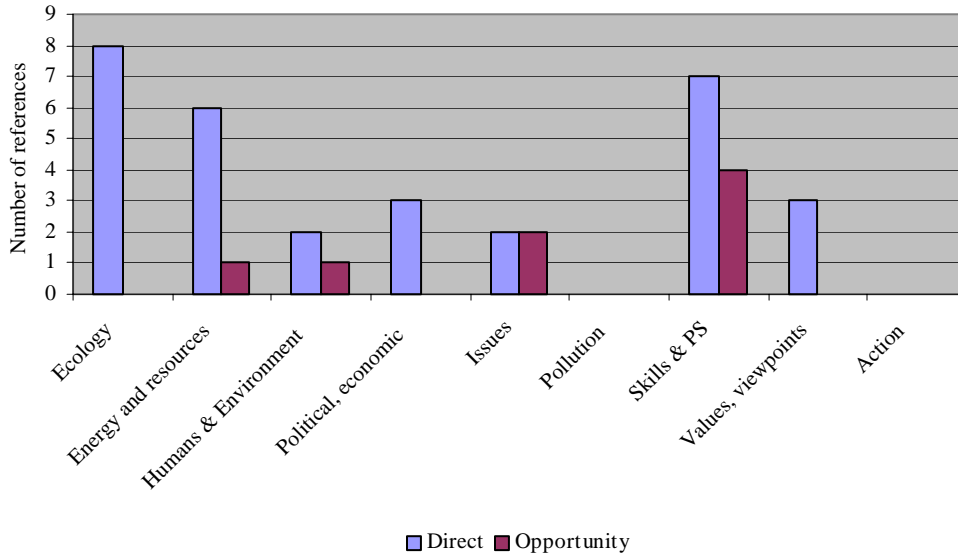
% of learning outcomes with direct EE reference	31%
% of learning outcomes that provide opportunities for EE	8%

Education for Sustainability rating ★

#### Strands/substrands

- 1 Investigating Scientifically
- 2 Earth and Beyond
- 3 Energy and Change

- 4 Life and Living
- 5 Natural and Processed Materials



LEVEL	STRAND	<b>OUTCOMES – direct</b>					
		The outcome is directly related to Environmental Education					
			About	Humans	Skills	Values	Action
f.2	1	The student explores the environment using the senses.	*				
ebf	2	The student demonstrates an awareness of local environmental features.	*				
eb1	2	The student understands that easily observable environmental features, including the sun and moon, may influence life.	*				
eb2	2	The student understands how some changes in the observable environment, including the sky, influence life.	*				
eb3	2	The student understands changes and patterns in different environments and space, and relates them to resource use.	*				
eb4	2	The student understands processes that can help explain and predict interactions and changes in physical systems and environments.	*				
eb5	2	The student understands models and concepts that explain Earth and space systems and that resource use is related to the geological and environmental history of the Earth and universe.	*				
eb6	2	The student understands how concepts and principles are used to explain geological and environmental change in the Earth and large-scale systems in the universe.	*				
eb7	2	The student understands the role of science in exploiting resources, assessing human impact on environments and developing theories of the evolution of the universe.	*		*	*	

eb8	2	The student understands how to assess the role of science in the environment and the universe.		*	*	*	
ecf	3	The student demonstrates an awareness that energy is present in daily life.	*				
ec3	3	The student understands patterns of energy use and some types of energy transfer.	*				
ed8	3	The student understands how to assess the role of science in helping us to explain energy systems, production and use.	*				
<b>LEVEL</b>	<b>STRAND</b>	<b>OUTCOMES – direct (cont.)</b>	<b>About</b>	<b>Humans</b>	<b>Skills</b>	<b>Values</b>	<b>Action</b>
		The outcome is directly related to Environmental Education					
II1	4	The student understands that people are examples of living things and that, like all living things, they change over time.	*	*			
II2	4	The student understands that needs, features and functions of living things are related and change over time.	*	*			
II3	4	The student understands that living things have features that form systems which determine their interaction with the environment.	*				
II4	4	The student understands that systems can interact and that such interactions can lead to change.	*		*		
II5	4	The student understands the models and concepts that are used to explain the processes that connect systems and lead to change.	*		*		
II6	4	The student understands the concepts and principles used to explain the effects of change on systems of living things.	*	*	*		
II7	4	The student understands the role of science in developing knowledge about systems and change.		*	*		
II8	4	The student understands how to assess the role of science in helping people to understand systems and change.		*	*	*	
npmf	5	The student demonstrates an awareness of materials and their properties.	*				

		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
is6.1	1	The student analyses a problem, formulates a question or hypothesis for testing, uses scientific knowledge to identify main variables to be considered and make predictions, and plans for accurate measurement.			*		
is7.1	1	The student identifies own real-world problem for investigation, uses reference material in developing an understanding of the problem, and plans one or more experiments in an ongoing investigation.			*		
is8.4	1	The student evaluates the findings and the experimental design, reformulates the problem, and plans follow-up experiments in an ongoing investigation, and refinements to experimental techniques and design.			*		
npm 2	5	The student understands that properties, changes and uses of materials are related.		*			

npm 7	5	The student understands the role of science in developing knowledge about the structure, change and use of materials.	*	*			
npm 8	5	The student understands how to assess the role of science in helping people to describe the structure, change and use of materials.		*	*		

## Society and Environment

### General comments:

This document contains a high Environmental Education level and recognition of ecological sustainability.

### Overall:

% of learning outcomes with direct EE reference 35%

% of learning outcomes that provide opportunities for EE 0%

Education for Sustainability rating ★★★★★

### Strands/substrands

ICP Investigation, Communication and Participation

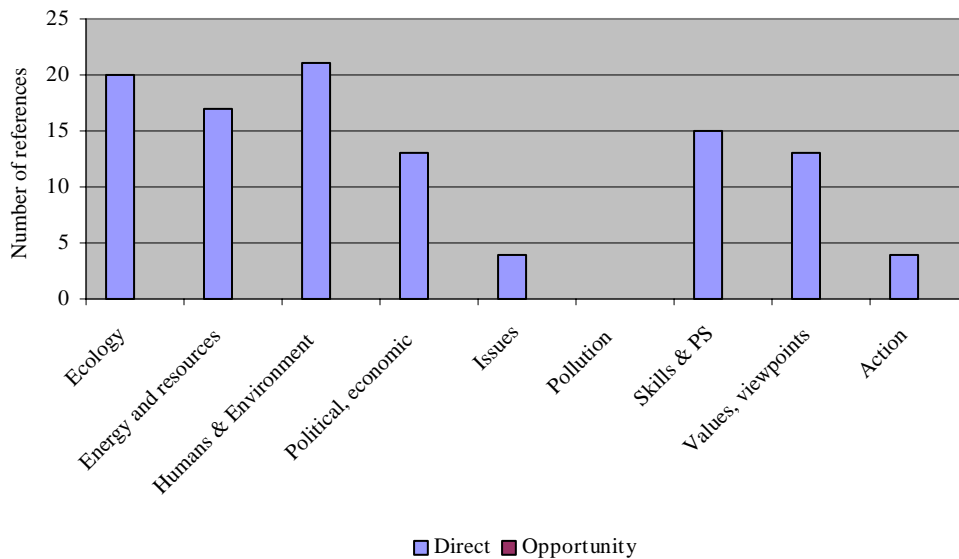
PS Place and Space.

R Resources.

C Culture

TCC Time, Continuity and Change

NSS Natural and Social Systems



LEVEL	STRAND	<b>OUTCOMES – direct</b>				
		About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education				
ICP5 .1	ICP	Analyzes a social/environmental issue, formulates questions and plans ways of investigating them.			*	
ICP8 .1	ICP	Presents a research proposal and designs a research plan using the methodologies of social and environmental inquiry.			*	
ICP8 .2	ICP	Conducts a balanced investigation in the field of society and environment.			*	
F.1	PS	Recognises familiar features in the immediate environment.	*			
3	PS	Understands that the use people make of different places is affected by natural and built features	*	*		
4	PS	Understands that people act to sustain the environment according to their values			*	*
5	PS	Understands that differing values affect the ways in which individuals and groups act to sustain the environment	*			
LEVEL	STRAND	<b>OUTCOMES – direct (cont.)</b>				
		About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education				
6	PS	Understands that over time people's commitment to ecological sustainability has influenced their care of places	*	*		
7	PS	Understands that it is possible to generalise about variations in natural and built landscapes by applying an understanding of patterns and processes	*	*		
7	PS	Understands that people's views about the care of places is related to the level of commitment they have to ecological sustainability	*		*	
8	PS	Understands that public decision-making on the uses of place and space involves consideration of people's diverse views about ecological sustainability	*	*	*	
1	R	Understands that people use resources	*	*		
1	R	Understands that people manage the use of some resources	*			
2	R	Understands that people use a variety of resources to make different goods and services in an attempt to satisfy their needs and wants	*			
2	R	Understands that people manage the use of resources in different ways	*		*	
3	R	Understands that people have to make choices in their use of limited resources	*			
3	R	Understands that people attempt to be enterprising in their management of resources	*	*	*	
4	R	Understands that people make decisions about efficient resource use to increase their ability to satisfy needs and wants		*		
4	R	Understands that people make decisions in order to be efficient and enterprising in their use of resources	*		*	
5	R	Understands that people's ability to make efficient use of resources is affected by their access to, and ownership of, various resources		*		

5	R	Understands that people's ability to manage resources in enterprising ways is affected by their access to, and ownership of, various resources		*				
6	R	Understands that the extent to which people are able to meet their needs and wants is influenced by their level of access to, and ownership of, resources	*	*				
7	R	Understands that changes to relationships among resource use, economic growth, living standards and ecological sustainability have consequences for individuals, society and the environment.	*	*				
7	R	Understands that efficient management procedures are implemented in an attempt to optimise the development of resources	*	*				
8	R	Understands that current global resource use patterns have implications for individuals and groups in the future	*		*			
8	R	Understands that the effectiveness of current management policies and procedures has implications for the future development of resources	*	*	*			
2	C	Understands that people belong to cultural groups that have particular forms of cultural expression		*				
3	C	Understands that cultural groups have traditional and non-traditional aspects		*				
4	C	Understands that beliefs and traditions influence the nature of cultures		*				
<b>LEVEL</b>	<b>STRAND</b>	<b><i>OUTCOMES – direct (cont.)</i></b>	<b>About</b>	<b>Humans</b>	<b>Skills</b>	<b>Values</b>	<b>Action</b>	
		The outcome is directly related to Environmental Education						
7	C	Understands that change or continuity in cultural beliefs and traditions influences the interaction between cultures		*				
7	C	Understands that global trends and issues impact on the maintenance of cohesion and diversity in cultures.	*					
3	TC C	Understands that at particular times there are various factors which result in change.	*	*				
5	TC C	Understands that differences in people's beliefs and values contribute to varying interpretations of the past		*				
7	TC C	Understands that prevailing trends and movements over time contribute to changes in societies and environments	*					
8	TC C	Understands that values shape people's actions now and in the future, and determine the nature and extent of change or continuity in societies and environments	*			*		
F.1	NS S	Responds to features of the natural environment	*	*				
1	NS S	Understands that natural systems consist of elements including people	*	*	*			
2	NS S	Understands that elements of natural systems form communities in which each element depends on another	*	*				
3	NS S	Understands that elements of natural systems link to form cycles of which people are a part	*					
4	NS S	Understands that different elements respond and attempt to adapt to changes in natural systems	*			*		

4	NS S	Understands that people make decisions about the production, distribution and exchange of goods and services to satisfy needs and wants		*				
6	NS S	Understands that people affect and are affected by the interaction between natural systems on a global scale	*	*				
7	NS S	Understands that preservation of natural systems is influenced by people's commitment to values of ecological sustainability	*				*	
7	NS S	Understands that reform of economic systems is influenced by the commitment of people to social justice and ecological sustainability	*		*		*	
8	NS S	Understands that decisions related to preservation of natural systems have consequences for ecological sustainability in the future.		*	*		*	
8	NS S	Understands that reforms of political and legal systems have consequences for democratic process and social justice in the future		*	*			
8	NS S	Understands that reforms of economic systems have consequences for social justice and ecological sustainability in the future	*	*	*			
		Values and respects environments/habitats					*	*
		Values and appreciates the need to conserve resources and preserve environments/habitats					*	*
		Recognises the need to enhance environments.					*	*
		<b><i>OUTCOMES – part</i></b>						
		Some of the indicators used to describe the outcome point to Environmental Education						
ICP2 .4	ICP	Presents findings and compares own interpretation with those of others.					*	
ICP6 .1	ICP	Analyses a problem, formulates own hypothesis, uses social and environmental conceptual understandings to identify the main aspects to be considered, and makes predictions.			*			
1	PS	Understands that people live in places made up of various features.	*					
2	PS	Understands that places are characterised by their location and specific natural and built features	*	*				
3	PS	Understands that the features of places are influenced by various natural processes.	*					
3	PS	Understands that people have different views about which places need to be cared for	*					
4	PS	Understands that people have different views about which places need to be cared for	*	*				
5	PS	Understands that a range of factors, processes and values influence the interdependence of people and places	*	*				
6	PS	Understands that variations in spatial patterns occur as the result of the interaction of various processes over time	*	*				
6	PS	Understands that over time the interaction of factors, processes and values results in variations in the way people and places are interdependent.	*					
7	PS	Understands that the extent to which people value places is influenced by the nature of interaction and level of interdependence between them.	*				*	

8	PS	Understands that planning and management are used in balancing or deciding among competing demands for the use of places		*		*	
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## English

### General comments:

There are no direct Environmental Education statements. In Speaking and Listening, however, the potential for discussing and analysing environmental issues is indirectly highlighted ...*Students typically communicate detailed information and explore different ways of looking at complex issues in both structured and unstructured situations.* (level 6)

### Overall:

% of learning outcomes with direct EE reference                      0%  
 % of learning outcomes that provide opportunities for EE            10%

Education for Sustainability rating    Nil

Strands/substrands

- SL    Speaking and Listening
- V    Viewing
- R    Reading
- W    Writing

LEVEL	STRAND	<b>OUTCOMES – – opportunity</b>	About	Humans	Skills	Values	Action
		The outcome provides an opportunity for Environmental Education					
1.1a	SL	Uses expressions of routine social interaction correctly; recounts and discusses personal experiences; and conveys key information or ideas on a familiar topic.	*		*		
2.1a	SL	Explains familiar procedures, describes or recounts events in logical sequence and sustains conversations on a familiar topic.	*		*		
3.1a	SL	Interacts to express opinions and perceptions, participates in problem-solving discussions with peers and gives brief reports and summaries.			*	*	
4.1a	SL	Develops and presents familiar ideas and information and supports opinions with some detail in a variety of classroom situations.	*		*		
5.1a	SL	Interacts with peers in structured situations to discuss familiar or accessible subjects involving challenging ideas and issues.	*		*		
6.1a	SL	Conveys detailed information and explores different perspectives on complex issues when interacting with known social groups in formal and informal situations.			*	*	

7.1b	SL	Speaks effectively in a variety of contexts in ways that address complexity of purpose and subject matter and the requirements of particular audiences.			*	*	
8.1a	SL	Interacts responsively, critically and confidently with audiences on specialised topics in formal and informal situations and consistently achieves a variety of purposes in speech.	*	*	*		
1	V	Makes connections between own knowledge and experience and ideas, events and information in viewed texts.	*		*		
6	V	Explores different perspectives on complex issues through viewing a range of texts and relates these perspectives to personal understanding of the contemporary world.	*		*	*	
8	V	Analyses visual texts in terms of the sociocultural values, attitudes and assumptions they project and reflect			*	*	
6	R	Explores different perspectives on complex issues through reading a range of texts and relates these perspectives to personal understanding of the contemporary world.	*		*	*	
8	R	Analyses texts in terms of the sociocultural values, attitudes and assumptions they project and reflect.			*	*	
8	R	Uses reading strategies that enable detailed critical evaluation of texts and makes links to the sociocultural world.			*		
2	W	Writes brief imaginative and factual texts which include some related ideas about familiar topics.	*		*		
3	W	Experiments with interrelating ideas and information when writing about familiar topics.	*		*		
6	W	Conveys detailed information and explores different perspectives on complex, challenging issues when writing for specific and general audiences.			*	*	
8	W	Writes convincingly and expressively on specialised topics and complex, often abstract, ideas, and consistently achieves a wide variety of purposes in writing for both specific and general audiences.			*	*	

## Mathematics

### General comments:

Examples provided are quite explicit in relating mathematics to everyday objects and activities. The Elaboration and Strand outcome statements have an environmental flavour.

As examples:

*Working mathematically: Students can identify and describe some of the mathematical representations of aspects of the world. Thus they may research and report on the use of perspective in art, how biologists use ideas about enlargement and distortion to explain why certain animals are the shape they are and the networks in kinship maps. They may also find out about and describe some of the mathematical patterns in natural and built things, for example, the Fibonnaci sequence inherent in pinecones...*

*Space: They produce diagrams, such as networks, which show key locations in a familiar environment*

### Overall:

% of learning outcomes with direct EE reference

10%

% of learning outcomes that provide opportunities for EE 7%

Education for Sustainability rating Nil

Strands/substrands

- 1 Working Mathematically
- 2 Space
- 3 Number
- 4 Algebra
- 5 Measurement
- 6 Chance and Data

LEVEL	STRAND					
		<b>OUTCOMES – direct</b>				
		The outcome is directly related to Environmental Education				
			About Humans	Skills	Values	Action
3	1	Identifies familiar mathematical features inherent in the activities and products of own and other communities.	*		*	
4	1	Compares the ways in which familiar mathematics is done or used in own and other communities	*		*	
5	1	Describes how some familiar mathematical ideas are, or have been, used by people to represent, describe and explain their world.	*		*	
6	1	Uses familiar mathematical ideas to represent, describe and explain some features of their world	*		*	
7	1	Makes links between the development and use of mathematical ideas and the conditions and concerns of the individuals and communities which produce them	*		*	*
8	1	Appreciates that there is a relationship between mathematics and social conditions and values, commenting on the role of mathematics in describing and shaping aspects of people's lives.	*		*	*
		<b>OUTCOMES – part</b>				
		Some of the indicators used to describe the outcome point to Environmental Education				
2	2	Attends to order and betweenness on informal maps and in descriptions of locations and paths.	*		*	
3	2	Understands a map or plan as a 'bird's-eye view' and uses order, proximity and directional language associated with quarter and half turns on maps and in descriptions of locations and paths	*		*	
4	2	Uses distance, direction and grids on maps and plans and in descriptions of locations and paths.	*		*	
5	2	Uses distance, direction and grids on maps and plans and in descriptions of locations and paths.	*		*	
6	2	Uses distance, direction and grids on maps and plans and in descriptions of locations and paths.			*	

6	3	Classifies number patterns which are linear, square or involve a power of a whole number; interprets, constructs and clarifies rules for describing them; and applies them to familiar or concrete situations.	*		*			
7	3	Chooses and uses ratios and rates, including by using their understanding of the nature of a ratio or rate to assist them to deal with new situations or situations involving unfamiliar rates.	*		*			
5	4	Generates and plots data in first-quadrant coordinate graphs, describing patterns in the resulting scatter of points	*					
6	4	Generates and plots data in first-quadrant coordinate graphs, describing patterns in the resulting scatter of points	*					
3	5	Directly and indirectly compares and orders things by length, area, capacity, mass, time and angle, measures them by counting uniform units and uses standard scales to measure length and time			*			
3.4(a)	5	Understands and measures perimeter directly and uses straightforward arithmetic to determine perimeters, elapsed time and other measurements which cannot be obtained directly.			*			
3.4(b)	5	Attends informally to scale when making and using plans, maps and models			*			
1	6	Participates in classifying and sequencing objects and pictures and, with guidance, poses questions about them.			*			
2	6	Realises that we can answer some questions ourselves by collecting, classifying and sequencing data and applies unambiguous and familiar			*			

		<b>OUTCOMES – opportunity</b>						
		The outcome provides an opportunity for Environmental Education						
1	1	Talks about some of the ways numbers, shapes and time are used by self and family.	*		*			
1	3	Reads, writes and says small whole numbers, using them to say how many things there are, makes collections of a given size, and describes order.			*			
7	3	Classifies number patterns by considering the behaviour of successive terms in sequences, parameters and the types of general rules that can be used to describe them; and relates these patterns to everyday situations.	*					
		<b>OUTCOMES – opportunity (cont.)</b>						
		The outcome provides an opportunity for Environmental Education						
7	4	Plots, sketches and interprets graphs in four quadrants considering local and global features including maxima and minima and cyclical changes.	*					
1	5	Directly compares and orders 'straight' lengths and events in time and counts informal units of length, capacity, area, mass and time to decide 'how many fit or match'			*			

3	5	Realises that using a uniform unit repeatedly to match an object gives a measure of the size of the object, and chooses suitable and uniform things to use as units and a common unit to compare two things			*		
4	5	Uses the known size of familiar things to help make and improve estimates, including centimetres, metres, kilograms, litres and minutes			*		
4	6	Places events in order from those least likely to those most likely to happen on the basis of numerical and other information about the events			*		
5	6	Displays one-variable and two-variable data in tables and plots and summarises data with fractions, percentages, means and medians			*		
5	6	Reads and makes sensible statements about trends and patterns in the data in tables, diagrams, plots, graphs and summary statistics and comments on their data collection processes and their results			*		
6	6	Estimates probabilities and proportions based on primary or secondary data collection and assigns probabilities for one- and two-stage events by reasoning about equally likely outcomes			*		
6	6	Plans experiments, surveys and secondary data collection, collaboratively and independently, checking that data are recorded and organised correctly, including in databases			*		
6	6	Interprets, makes comparisons and describes relationships in collected and published data from tables, diagrams, plots, graphs, prose, summary statistics and databases, distinguishing sample and population data.			*		
7	6	Plans experiments, simulations, surveys, secondary data collection and the construction of databases, considering the quality and appropriateness of observations and suitability of samples			*		

## Health and Physical Education

### General comments:

The Health strand provides some opportunities to introduce aspects of Environmental Education. Physical Education is largely skills based. There are some environmental references in the elaboration of the outcomes.

For example:

*In physical activity contexts, students analyse the influence of minimal impact techniques on wilderness environments.*

*Students show responsibility for themselves, others and the environment, such as in the preparation and participation in a group expedition.*

### Overall:

% of learning outcomes with direct EE reference 11%

% of learning outcomes that provide opportunities for EE 0%

Education for Sustainability rating

Nil



- 1 Critiquing
- 2 Designing
- 3 Making

LEVEL	STRAND	<b>OUTCOMES – direct</b>				
		About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education				
tp3.1	1	The student examines and identifies key design features, including aesthetic features, and environmental effects of products, systems, processes, services and environments.	*		*	*
tp3.2	1	The student generates designs that take into account some social and environmental implications and communicates using a range of graphical representations, models and technical terms.	*		*	
tp3.3	1	The student plans and carries out the steps of production processes, making safe and efficient use of resources.	*		*	
tp3.4	1	The student assesses how well the ideas, products, systems, processes, services and environments used meet design requirements, including consideration of functional and aesthetic criteria.	*		*	
tp4.1	1	The student determines the appropriateness of technologies for communities and environments.	*			*
tp4.4	1	The student assesses the effectiveness of own designs, products, systems, processes, services and environments in relation to design requirements, including consideration of social and environmental criteria.	*		*	
tp5.1	1	The student investigates and explains how the design, production and use of technologies are affected by the needs of communities and environments.	*		*	*
tp5.2	1	The student creates and prepares design and production proposals that include an examination of a range of options; demonstrates consideration of functional, aesthetic, social and environmental issues; and communicates using graphics and technical languages associated with particular fields of technology.	*		*	*
tp5.4	1	The student assesses own products, systems, processes, services and environments according to specified design requirements, including ethical criteria and comparisons with similar technologies.	*		*	*
tp6.1	1	The student analyses how needs, resources and circumstances affect the development and application of particular technologies.	*			*
tp6.2	1	The student creates and prepares detailed design and production proposals that show how the ideas have been developed, justifying the functional, aesthetic, social and environmental choices made; and communicates using symbols, graphics and technical languages adapted to the needs of the audience.	*			*
tp7.1	1	The student analyses the costs and benefits of particular technologies and the values that underpin their development and application.		*		*

LEVEL	STRAND	<b>OUTCOMES – direct (cont.)</b>					About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education									
tp7.4	1	The student evaluates technologies using qualitative and quantitative methods to determine their functional and aesthetic appeal; and predicts social and environmental impacts and commercial feasibility, together with community acceptance or value.			*	*					
tp8.1	1	The student analyses the design, development and marketing of technologies to identify needs and opportunities for innovation, and their social, political, ethical, environmental and economic implications.		*	*	*					
tp8.2	1	The student creates and prepares detailed design and production proposals that show evidence of innovation and are justified by modelling (computer modelling, mathematical and scientific simulation, and pilot studies); analyses social, political, ethical and environmental impacts and economic feasibility; and presents in forms suitable for technical and non-technical audiences.		*	*	*					
tp8.4	1	The student analyses own products, systems, processes, services and environments to evaluate the effectiveness of methodologies used and the short and long-term impacts on particular environments and cultures.			*						
s3.1	2	The student understands that cause-and-effect relationships occur within systems and that these can affect people and the environment.			*						
s5.1	2	The student selects and uses techniques to organise, assemble and disassemble systems to manage, control and assess their performance.		*							
s6.1	2	The student understands that the principles, structure, logic, organisation and control of systems influence the impact of systems on people, communities and the environment.	*	*							
s7.1	2	The student understands that the management and structure of complex systems, described through their logic, sequences and controls and, using where necessary, mathematical, scientific and organisational principles, influence the nature of their impact on communities and environments.		*	*						
m5.1	3	The student understands that the properties of materials must meet functional, aesthetic and environmental requirements.	*								
m7.1	3	The student understands that to effectively match the properties of new and traditional materials to design, production and service requirements while addressing cultural, social and environmental requirements, research and test information is used.	*	*	*						
m8.1	3	The student understands that when selecting and using new and traditional materials, their physical and chemical structures and properties need to match design, production and service requirements while meeting cultural, social and environmental requirements.	*		*						
i8.1	4	The student understands that the impact of information on different societies and environments is affected by access to, validity and meaning of information which can be controlled by the style, form, source and medium used.				*					

		<b><i>OUTCOMES – opportunity</i></b>					
		The outcome provides an opportunity for Environmental Education					
tp1.4	1	The student describes feelings about own design ideas, processes	*		*		
tp2.1	1	The student investigates and identifies the uses and effects of products, systems, processes, services and environments.	*		*		

## The Arts

### General comments:

This is largely a skills-based approach to the arts. However a number of references are made to environmental ideas and issues. For example:

*CAI 5: They explore demanding and mature issues such as multicultural Australia, by discussing, researching and analysing multicultural music and songs, making improvisations on the theme and developing simple scripts and video documentaries or murals.*

*CAI 7: . For example, students design and present an installation which combines the use of painting, sculpture, music, video, slides and actors to symbolically explore a theme such as the way in which humans have desecrated the environment.*

*CAI 8: Students, for example, use personal values as starting points to make an arts work, such as a dance for a peer group that explores social, cultural, national or world issues, concepts or themes (e.g. pollution, racism or peer group pressure)*

### Overall:

% of learning outcomes with direct EE reference	3%
% of learning outcomes that provide opportunities for EE	22%

Education for Sustainability rating ★

### Strands/substrands

CAI Communicating arts ideas  
 STP Using arts skills etc.  
 RRE Responding, reflecting and evaluating the arts  
 AIS Understanding the role of the arts in society

LEVEL	STRAND	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
F	CAI	Begins to explore sensory experiences in the environment and expresses ideas in a variety of ways through play.	*				

		<b>OUTCOMES – opportunity</b>					
		The outcome provides an opportunity for Environmental Education					
2	CAI	Draws on own experiences and observations in the development of arts works which use her or his ideas for personal creative expression.	*				*
4	CAI	Creatively solves problems individually or in groups and within given structures, to complete arts works which show clearly-developed ideas		*	*	*	
7	CAI	Makes arts works by deliberately choosing from a diversity of ideas, and explores and communicates why and how choices were made			*		
7	RR E	Uses formal processes of description, analysis, interpretation and evaluation to make and support informed judgements about own and others' arts works and activities.		*		*	
F	AIS	Shows an awareness of auditory, visual, tactile and/or kinaesthetic stimuli in the immediate environment	*				
1	AIS	Recognises and talks about arts experiences in own life and arts activities in the immediate community.	*			*	
3	AIS	Identifies and discusses specific features of the arts in own community and in other cultures or times and uses this understanding in own arts works and activities	*			*	
7		Understands the roles and values of the arts in society and how they influence change according to the contexts of societies, cultures and times; and uses this understanding in own arts works.			*	*	

## **Years 11 and 12**

### **Physics (Year 11 and Year 12)**

#### **General comments:**

There are no direct aims or objectives linked to Environmental Education. Although Science–Technology–Society links are present, for example in the general aims:

- *Demonstrate an awareness of the relevance of physics to technology and daily lives.*

They are also found in the attitudinal objectives:

- *Appreciate the interaction between science, technology and society, and recognise that problems can arise as a result of the introduction of new technologies.*

**Overall:**

Education for Sustainability rating



Year 11

Unit 1: Energy in Everyday Life

1.2 Heating and cooling

1.3 Nuclear technology

Unit 2: Movement and Electricity

2.2 Electricity

Year 12

Unit 1 Physics in the Modern World

1.2 Electrical power

LEVEL	Unit	<b>OUTCOMES – direct</b>	About	Humans	Skills	Values	Action
		The outcome is directly related to Environmental Education					
11	1.2	15. State the principle of conservation of energy and explain the implications of energy degradation.	*	*			
11	1.3	21. Describe the major sources of radiation in the environment.	*	*			
11	1.3	22. Describe the short- and long-term effects of radiation on humans.		*			
11	1.3	23. Describe the short- and long-term advantages and disadvantages of both nuclear and conventional power stations and other applications of nuclear technology	*	*			
11	2.2	14. Be able to calculate the energy consumed by and the cost of operating common electrical appliances		*			
12	1.2	19. Discuss the major environmental impacts of electrical production and transmission	*	*			

**Biology**

Year 11 – D402

Year 12 – E402

**General comments:**

The Rationale (similar at both levels) includes an indirect reference to the environment:

- *It is important that ordinary citizens, scientists and technologists are informed about the living world, its structure, its interactions, and our relationships with it.*

The General Aims also has an indirect reference:

- *an ability to apply biological understanding to appropriate problems (including those of everyday life) and to approach those problems in rational ways.*

**Overall:**

Education for Sustainability rating



LEVEL	STRAND						
		<b>Units – direct</b>	About	Humans	Skills	Values	Action
		The unit is directly related to Environmental Education					
11	2	The Organism and Its Environment	*		*		
11	3	Population and Communities	*	*	*		

		<b>Units – part</b>					
		Some of the indicators used to describe the unit point to Environmental Education					
12	3	The Species		*			

		<b>Units – opportunity</b>					
		The unit provides an opportunity for Environmental Education					
12	4	The Ecosystem	*	*	*		
11	1	Diversity and Classification	*				

**Chemistry**

**General comments:**

There are not many references to the environment in either the Year 11 or 12 documents. However in the Rationale, it is stated: ... *enable them to understand and interpret the chemistry of their surroundings and appreciate the impact of chemical knowledge and technology on society.*

**Overall:**

Education for Sustainability rating



**English**

**General comments:**

In the Year 11 course, three process objectives provide some broad opportunities for Environmental Education:

- *recognise the relevance of their reading to various aspects of human experience; discuss this relevance orally and in writing*
- *consider wider issues arising from their reading; write and speak about such issues in a clear, coherent and perceptive way*
- *write and speak clearly, coherently and perceptively about their ideas, opinions and personal experiences*

The general principles also contain indirect references to the environment.

*...The first principle is that students should develop an awareness of the relationship between their reading and human experience.*

*The third principle is that students should become familiar with some of the techniques and conventions by which texts convey meanings and communicate values and views of the world.*

In the Year 12 course, process objectives include:

- *shape their writing and speaking for appropriate audiences and purposes*
- *identify the themes, ideas, propositions or arguments in print and non-print texts*
- *develop critical understandings in their reading of print and non-print texts by:*
  - In non-Fiction Texts

Students will be taught to identify the ideas, propositions and arguments presented in an expository text, and to recognise the assumptions and values underlying them.

– The feature articles from newspapers and magazines appropriate for this subject present detailed views of events, people and issues. Students may begin by reading articles that deal with familiar and local subjects but will extend their reading to cover topics of wider national and international significance.

**Overall:**

Education for Sustainability rating

**Geography****General comments:**

Year 11 (D305) and Year 12 (E305) are traditional Geography courses with very little direct Environmental Education. Issues/values are highlighted as one of the approaches.

In Year 12, the general aim is to *encourage a values approach to the study of place, process and issues.*

*Teachers should include a treatment of values when studying the issues within each unit.*  
(Year 11)

**Overall:**

Education for Sustainability rating



<b>LEVEL</b>	<b>STRAND</b>		<b>About</b>	<b>Humans</b>	<b>Skills</b>	<b>Values</b>	<b>Action</b>
		<b><i>Units – direct</i></b>					
		The unit is directly related to Environmental Education					
11		World biomes	*		*		
11		Resource studies	*	*	*		

		<b><i>Units – part</i></b>					
		Some of the indicators used to describe the unit point to Environmental Education					
11		Atmospheric studies	*	*			
12		Settlement patterns	*	*			
12		Urban Australia	*	*			

		<b><i>Units – opportunity</i></b>					
		The unit provides an opportunity for Environmental Education					
11		Geomorphic studies	*	*			
11		Patterns of development	*	*			
11		Regional studies	*	*	*		
12		Landscapes and land use in Australia	*	*			

**Other courses identified:**

Outdoor Education (H&PE), Health Studies (H&PE), Senior Science, Economics, Australian Studies, Food Technology (T&E), Animal Production and Marketing (T&E), Farm practice (T&E), Plant Production and Marketing (T&E), Nautical Studies (T&E), Art, Art and Design, and possibly Drama and Music.

