

Mapping tool – preamble for Science

This mapping tool matches essential content elements from two curriculum frameworks: *Every chance to learn* ELA 19, ELA 2 and ELA 20 to the Australian Curriculum (Science) V1.1. Teachers using this tool are reminded to consider the underlying principles and philosophy as well.

The **Overview** of each ELA in *Every chance to learn* discusses the scope, features, concepts, values and attitudes of

- ELA 19 *The student understands and applies scientific knowledge*
- ELA 2 *The student understands and applies the inquiry process*
- ELA 20 *The student acts for an environmentally sustainable future*

The **Rationale** of the Australian Curriculum (Science) reminds readers that the interrelated strands have different intentions:

- The *Science Understanding* strand refers to *the facts, concepts, laws theories and models that have been established by scientists over time*
- The *Science as a Human Endeavour* strand *highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving.*
- The *Science Inquiry Skills* strand outlines the process of working scientifically.

As Sustainability is a cross-curriculum priority, the elaborations of all phase 1 learning areas provide examples of how sustainability may be embedded within content.

Given that the documents are differently organised, the similarity of some essential content in both documents may appear superficial. These types of matches have been identified using a paler font colour.

Further information can be inferred from

- **strand** and **sub-stand** headings
- opening **hyperlinked codes** to the Australian Curriculum, and pasting them into the 'search' function to identify content elaborations, general capabilities and links to cross-curriculum priorities.

Science – Early Childhood

Every chance to learn		Australian Curriculum		
19. The student understands and applies scientific knowledge		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Foundation	Year 1	Year 2
19.EC.1	scientific aspects of their everyday activities and applications of science in their own lives (e.g. uses of energy in the home, ball games, pet care, decisions influenced by weather) and the place of science in the work of people in the community	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU004) Daily and seasonal changes in our environment, including the weather, affect everyday life 	<ul style="list-style-type: none"> • Use and influence of science (ACSHE022) People use science in their daily lives, including when caring for their environment and living things 	<ul style="list-style-type: none"> • Use and influence of science (ACSHE035) People use science in their daily lives, including when caring for their environment and living things
19.EC.2	how pushing and pulling objects affects their motion and shape	<ul style="list-style-type: none"> • Physical sciences (ACSSU005) The way objects move depends on a variety of factors, including their size and shape 		<ul style="list-style-type: none"> • Physical sciences (ACSSU033) A push or a pull affects how an object moves or changes shape

19.EC.3	the concept of energy being needed to get things done and different forms of energy they use in familiar situations (e.g. light from the sun, heat used in cooking, electricity from batteries to make toys work)	•	•	•
19.EC.4	observable properties of common materials in a variety of everyday objects	<ul style="list-style-type: none"> • Chemical sciences (ACSSU003) Objects are made of materials that have observable properties 		•
19.EC.5	how changing familiar materials changes their properties (e.g. heating, cooling, wetting, mixing)	•	<ul style="list-style-type: none"> • Chemical sciences (ACSSU018) Everyday materials can be physically changed in a variety of ways 	•
19.EC.6	obvious features of a variety of plants and animals	•	<ul style="list-style-type: none"> • Biological sciences (ACSSU017) Living things have a variety of external features 	
19.EC.7	differences between living and non-living things using basic criteria (e.g. characteristics and basic needs)	•	•	•

19.EC.8	some of the changes that take place as living things grow, and similarities of parents and their offspring	•	•	<ul style="list-style-type: none"> • Biological sciences (ACSSU030) Living things grow, change and have offspring similar to themselves
19.EC.9	some of the ways in which living things depend on their environment and each other (e.g. basic needs for survival)	<ul style="list-style-type: none"> • Biological sciences (ACSSU002) Living things have basic needs, including food and water 	<ul style="list-style-type: none"> • Biological sciences (ACSSU211) Living things live in different places where their needs are met 	
19.EC.10	changes on Earth and in space (e.g. weather, night and day, seasons), recognising that some are more predictable than others	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU004) Daily and seasonal changes in our environment, including the weather, affect everyday life 	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU019) Observable changes occur in the sky and landscape 	
19.EC.11	some of the ways in which living things depend on the Earth (e.g. soil, water, air) and are affected by its changes	<ul style="list-style-type: none"> • Biological sciences (ACSSU002) Living things have basic needs, including food and water (repeat) 	<ul style="list-style-type: none"> • Biological sciences (ACSSU211) Living things live in different places where their needs are met (repeat) 	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU032) Earth's resources, including water, are used in a variety of ways

19.EC.12	ask questions about and explore phenomena, relationships and ideas	<ul style="list-style-type: none"> • Planning and conducting (AC SIS011) Explore and make observations by using the senses 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS024) Respond to and pose questions, and make predictions about familiar objects and events • Nature and development of science (AC SHE021) Science involves asking questions about, and describing changes in, objects and events 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS037) Respond to and pose questions, and make predictions about familiar objects and events • Nature and development of science (AC SHE034) Science involves asking questions about, and describing changes in, objects and events
19.EC.13	observe, identify and describe features, properties and the ways things change	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS014) Respond to questions about familiar objects and events 	<ul style="list-style-type: none"> • Nature and development of science (AC SHE021) Science involves asking questions about, and describing changes in, objects and events (repeat) 	<ul style="list-style-type: none"> • Nature and development of science (AC SHE034) Science involves asking questions about, and describing changes in, objects and events (repeat)
19.EC.14	examine and compare materials, living things and non-living things	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
19.EC.15	talk about their investigations and observations	<ul style="list-style-type: none"> • Communicating (AC SIS012) Share observations and ideas 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

NEW MATERIAL		<ul style="list-style-type: none"> Nature and development of science <p>(ACSHE013) Science involves exploring and observing the world using the senses</p>	<ul style="list-style-type: none"> Physical sciences <p>(ACSSU020) Light and sound are produced by a range of sources and can be sensed</p>	<ul style="list-style-type: none"> Chemical sciences <p>(ACSSU031) Different materials can be combined, including by mixing, for a particular purpose</p>
Every chance to learn		Australian Curriculum		
2. The student understands and applies the inquiry process		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Foundation	Year 1	Year 2
2. EC.1	explore inquiry as a useful process for creating knowledge and understanding the world around them	•	•	•
2. EC.2	contribute to planning and conducting simple investigations by asking questions and seeking answers through observing, experimenting, engaging with information in texts, discussing ideas with others and using ICT	•	<ul style="list-style-type: none"> Planning and conducting <p>(AC SIS025) Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources</p>	<ul style="list-style-type: none"> Planning and conducting <p>(AC SIS038) Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources</p>

2. EC.3	ask questions and identify possible sources of information to seek answers	<ul style="list-style-type: none"> • Planning and conducting (AC SIS011) Explore and make observations by using the senses 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS024) Respond to and pose questions, and make predictions about familiar objects and events 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS037) Respond to and pose questions, and make predictions about familiar objects and events
2. EC.4	make predictions or conjectures related to their everyday experience and think through ways to test them	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
2. EC.5	make observations about what is happening around them using their senses	<ul style="list-style-type: none"> • Planning and conducting (AC SIS011) Explore and make observations by using the senses 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
2. EC.6	follow suggestions to collect and record data or information from a small range of sources (e.g. from simple experimentation, mathematical procedures, talking with others or from one or two text sources)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS026) Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS039) Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate
2. EC.7	learn how to use appropriate tools and equipment safely to make measurements and record information	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

2. EC.8	make judgements about the usefulness of data or information collected	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS212) Through discussion, compare observations with predictions</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS214) Through discussion, compare observations with predictions</p>
2. EC.9	follow suggestions to order and present data or information (e.g. grouping or sequencing, drawing, simple table, graph or timeline)	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS233) Engage in discussions about observations and use methods such as drawing to represent ideas</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS027) Use a range of methods to sort information, including drawings and provided tables</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS040) Use a range of methods to sort information, including drawings and provided tables</p>
2. EC.10	revisit their questions in the light of results or information collected, talk about the way in which the investigation could be changed and begin to consider the fairness of tests	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS233) Engage in discussions about observations and use methods such as drawing to represent ideas</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
2. EC.11	attempt to convince themselves and others that their findings are true	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS213) Compare observations with those of others</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS041) Compare observations with those of others</p>
2. EC.12	share and communicate observations, findings, ideas and understandings.	<ul style="list-style-type: none"> • Communicating <p>(AC SIS012) Share observations and ideas</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS029) Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS042) Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play</p>

Every chance to learn		Australian Curriculum		
20. The student acts for an environmentally sustainable future		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Foundation	Year 1	Year 2
20.EC.1	elements of the natural environment that humans, animals and plants need for survival	•	•	•
20.EC.2	different living things in their local environment and some observable relationships between living things and their environment	•	•	•
20.EC.3	how people cooperate to care for places in a community	•	•	•
20.EC.4	why it is important to conserve resources, protect the environment and participate in positive environmental action	•	•	•

<p>20.EC.5</p>	<p>observe and discuss changes evident in the local environment, both natural (e.g. seasonal changes) and those caused by human action (e.g. changes to the built environment)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>20.EC.6</p>	<p>share responsibility for the quality of their immediate environments and for resource conservation (e.g. dispose of litter, reuse and recycle some materials, and switch off unused lights)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>20.EC.7</p>	<p>describe preferred future scenarios in relation to particular aspects of their local environment (e.g. suggest ways the school playground could be improved)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Science – Later Childhood

Every chance to learn		Australian Curriculum		
19. The student understands and applies scientific knowledge		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Year 3	Year 4	Year 5
19.LC.1	how science is used in work and leisure	•	•	<ul style="list-style-type: none"> • Use and influence of science (ACSHE083) Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives (ACSHE217) Scientific knowledge is used to inform personal and community decisions
19.LC.2	some of the contributions made by people in different times and cultures to the development of scientific knowledge	•	•	<ul style="list-style-type: none"> • Nature and development of science (ACSHE082) Important contributions to the advancement of science have been made by people from a range of cultures
19.LC.3	the effects of different-sized forces on the shape and/or motion of objects	•	•	•

19.LC.4	the idea that some forces (e.g. magnetism) may act at a distance, while other forces need to be in contact with the object to affect it (e.g. hitting a ball)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Physical sciences (ACSSU076) Forces can be exerted by one object on another through direct contact or from a distance 	<ul style="list-style-type: none"> •
19.LC.5	different forms and sources of energy used in their community (e.g. heat, sound, light, electricity) and how energy can be transferred between objects	<ul style="list-style-type: none"> • Physical sciences (ACSSU049) Heat can be produced in many ways and can move from one object to another 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
19.LC.6	comparison of properties of an object with those of the materials of which it is made (e.g. eggs and sugar compared to meringue; sand and cement compared with concrete) and why materials are chosen for particular purposes	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Chemical sciences (ACSSU074) Natural and processed materials have a range of physical properties; These properties can influence their use 	<ul style="list-style-type: none"> •

19.LC.7	smaller visible parts that make up material under examination (e.g. grains, fibres)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Chemical sciences (ACSSU074) Natural and processed materials have a range of physical properties; These properties can influence their use 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS087) Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate
19.LC.8	different types of changes that materials may undergo	<ul style="list-style-type: none"> • Chemical sciences (ACSSU046) A change of state between solid and liquid can be caused by adding or removing heat 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
19.LC.9	structures of living things and relationships between structure and function	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Biological sciences (ACSSU043) Living things have structural features and adaptations that help them to survive in their environment
19.LC.10	categories of living things based on observable characteristics	<ul style="list-style-type: none"> • Biological sciences (ACSSU044) Living things can be grouped on the basis of observable features and can be distinguished from non-living things 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
19.LC.11	life cycles and reproductive processes in living things	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Biological sciences (ACSSU072) Living things have life cycles 	<ul style="list-style-type: none"> •

19.LC.12	some interactions between living things, and between living things and their environment	•	<ul style="list-style-type: none"> • Biological sciences (ACSSU073) Living things, including plants and animals, depend on each other and the environment to survive	
19.LC.13	the relationships between distance and apparent size of objects to an observer	•	•	•
19.LC.14	planets and other objects in the solar system, including current information from space exploration	•	•	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU078) The Earth is part of a system of planets orbiting around a star (the sun)
19.LC.15	gravity as a force that pulls things on or above the Earth's surface towards it	•	•	•
19.LC.16	identifiable causes for some of the short- and long-term changes to the surface of the Earth or the atmosphere (e.g. volcanic activity, soil erosion, air pollution)	•	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU075) Earth's surface changes over time as a result of natural processes and human activity	

<p>19.LC.17</p>	<p>observe, explore, investigate, consider, identify, describe, compare and sort natural phenomena and living and non-living things</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE050) Science involves making predictions and describing patterns and relationships</p> <ul style="list-style-type: none"> • Biological sciences <p>(ACSSU044) Living things can be grouped on the basis of observable features and can be distinguished from non-living things (repeat)</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE061) Science involves making predictions and describing patterns and relationships</p>	<ul style="list-style-type: none"> •
<p>19.LC.18</p>	<p>examine and predict events, speculate about how and why things happen, and compare explanations from different sources, using scientific language</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>19.LC.19</p>	<p>apply scientific understandings to their experiences and describe how products (e.g. hair gel, sunscreen, protective clothing) and tools (e.g. egg beater, hair dryer) have been developed</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

NEW MATERIAL	<ul style="list-style-type: none"> Earth and space sciences (ACSSU048) Earth's rotation on its axis causes regular changes, including night and day 		<ul style="list-style-type: none"> Chemical sciences (ACSSU077) Solids, liquids and gases have different observable properties and behave in different ways
	<ul style="list-style-type: none"> Use and influence of science (ACSHE051) Science knowledge helps people to understand the effect of their actions 	<ul style="list-style-type: none"> Use and influence of science (ACSHE062) Science knowledge helps people to understand the effect of their actions 	<ul style="list-style-type: none"> Physical sciences (ACSSU080) Light from a source forms shadows and can be absorbed, reflected and refracted
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Nature and development of science (ACSHE081) Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena
Every chance to learn	Australian Curriculum		
2. The student understands and applies the inquiry process	AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
	Year 3	Year 4	Year 5
2.LC.1	recognise different contexts for applying the inquiry process	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

2.LC.2	understand the various stages of planning and conducting a straightforward inquiry	•	•	•
2.LC.3	create questions and predictions for investigation and testing	<ul style="list-style-type: none"> • Questioning and predicting (ACSIS053) With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge 	<ul style="list-style-type: none"> • Questioning and predicting (ACSIS064) With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge 	<ul style="list-style-type: none"> • Questioning and predicting (ACSIS231) With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be
2.LC.4	identify and describe the mathematical nature of various problems and make and test straightforward statements, propositions and conjectures	•	•	•
2.LC.5	contribute to planning a variety of investigations, recognising where comparisons may be fair and unfair	<ul style="list-style-type: none"> • Planning and conducting (ACSIS054) Suggest ways to plan and conduct investigations to find answers to questions 	<ul style="list-style-type: none"> • Planning and conducting (ACSIS065) Suggest ways to plan and conduct investigations to find answers to questions 	<ul style="list-style-type: none"> • Planning and conducting (ACSIS086) With guidance, select appropriate investigation methods to answer questions or solve problems
2.LC.6	make decisions about information and equipment needed and the tasks to be carried out	•	•	•

2.LC.7	collect and record data, checking and repeating observations or measurements as needed	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS057) Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS068) Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends</p>	<ul style="list-style-type: none"> •
2.LC.8	use equipment safely and appropriately	<ul style="list-style-type: none"> • Planning and conducting <p>(AC SIS055) Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate</p>	<ul style="list-style-type: none"> • Planning and conducting <p>(AC SIS066) Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate</p>	<ul style="list-style-type: none"> • Planning and conducting <p>(AC SIS088) Use equipment and materials safely, identifying potential risks</p>
2.LC.9	use interviews and simple surveys to ask people for information and opinions	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
2.LC.10	conduct searches for information and use a range of sources (e.g. information texts, artefacts, maps, images)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
2.LC.11	evaluate the accuracy, relevance and credibility of data or information	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

2.LC.12	organise and present data, and identify patterns	•	•	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS090) Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate</p>
2.LC.13	discuss and compare results with their questions and predictions, and draw conclusions	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS215) Compare results with predictions, suggesting possible reasons for findings</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS216) Compare results with predictions, suggesting possible reasons for findings</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS218) Compare data with predictions and use as evidence in developing explanations</p>
2.LC.14	explain the inquiry approach taken and communicate their findings or conclusions, generalising about them using specific instances they have observed, data they have analysed or information they have assembled	<ul style="list-style-type: none"> • Communicating <p>(AC SIS060) Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS071) Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS093) Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts</p>
2.LC.15	attempt to convince others about the reasonableness of their findings	•	•	•

2.LC.16	reflect on their inquiry experience, identify what went well and difficulties encountered, and suggest improvements to the investigation.	<ul style="list-style-type: none"> Evaluating (AC SIS058) Reflect on the investigation, including whether a test was fair or not 	<ul style="list-style-type: none"> Evaluating (AC SIS069) Reflect on the investigation, including whether a test was fair or not 	<ul style="list-style-type: none"> Evaluating (AC SIS091) Suggest improvements to the methods used to investigate a question or solve a problem
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Every chance to learn		Australian Curriculum		
20. The student acts for an environmentally sustainable future		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Year 3	Year 4	Year 5
20.LC.1	natural cycles and systems in the environment (e.g. water cycle, food chains)	•	•	•
20.LC.2	the concept of habitat and the diversity of living things within a habitat	•	<ul style="list-style-type: none"> Biological sciences (ACSSU073) Living things, including plants and animals, depend on each other and the environment to survive (Repeated) 	

20.LC.3	some effects of human action on natural environments (e.g. land clearing, air and water pollution)	•	•	•
20.LC.4	how Earth's renewable and non-renewable resources, including energy sources, are used and the need to conserve non-renewable resources	•	•	•
20.LC.5	the preservation of natural environments and heritage sites and the importance of particular places to different individuals and groups, including Indigenous Australians (e.g. Uluru, Namadgi National Park, Canberra lakes and bushland)	•	•	•

20.LC.6	how protecting the environment requires that people work together as citizens and consumers and participate in appropriate actions as environmental stewards or in other civic action to effect positive change	•	•	•
20.LC.7	observe and gather data about local environments and changes over time due to human or natural events (e.g. school and grounds, nearby park or creek)	•	•	•
20.LC.8	take responsibility for caring for a local environment (e.g. part of school grounds, class garden, local park)	•	•	•

20.LC.9	investigate how their actions contribute to sustainability of resources and local environments (e.g. investigate issues relating to packaging and plastic bags, develop reuse and recycling systems in their classroom and school)	•	•	•
20.LC.10	explore probable and preferred futures in relation to environmental issues familiar to them and discuss actions needed to make preferred futures happen	•	•	•

Science – Early Adolescence

Every chance to learn		Australian Curriculum		
19. The student understands and applies scientific knowledge		AC Strand/s		
		SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Year 6	Year 7	Year 8
19.EA.1	how science and its applications have changed the ways people live	<ul style="list-style-type: none"> Use and Influence of science (ACSHE100) Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives 	<ul style="list-style-type: none"> Use and influence of science (ACSHE121) Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management 	<ul style="list-style-type: none"> Use and influence of science (ACSHE136) Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management
19.EA.2	scientific work as rewarding for a variety of reasons and contemporary Australian work in science	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Use and influence of science (ACSHE224) People use understanding and skills from across the disciplines of science in their occupations 	<ul style="list-style-type: none"> Use and influence of science (ACSHE227) People use understanding and skills from across the disciplines of science in their occupations

<p>19.EA.3</p>	<p>how scientific understandings have changed over time and that different cultures may have different views in relation to scientific practice (e.g. traditional cultural explanations of phenomena and practices in areas such as medicine)</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE099) Important contributions to the advancement of science have been made by people from a range of cultures</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE119) Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world</p> <ul style="list-style-type: none"> • Use and influence of science <p>(ACSHE120) Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE134) Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world</p> <ul style="list-style-type: none"> • Use and influence of science <p>(ACSHE135) Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations</p>
<p>19.EA.4</p>	<p>forces acting in the same or different directions and so supporting or opposing each other (e.g. floating and sinking, simple machines, speeding up and slowing down)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Physical sciences <p>(ACSSU117) Change to an object's motion is caused by unbalanced forces acting on the object</p>	<ul style="list-style-type: none"> •

19.EA.5	ways in which different forms of energy can be transferred or stored (e.g. electrical circuits, batteries)	<ul style="list-style-type: none"> • Physical Sciences (ACSSU097) Electrical circuits provide a means of transferring and transforming electricity (ACSSU219) Energy from a variety of sources can be used to generate electricity 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Physical sciences (ACSSU155) Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems
19.EA.6	a particle model to explain solids, liquids and gases	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Chemical sciences (ACSSU151) The properties of the different states of matter can be explained in terms of the motion and arrangement of particles
19.EA.7	relationships between properties, composition and use of different materials (e.g. strength, solubility, porosity, viscosity, absorbency and conductivity)	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
19.EA.8	features of physical and chemical changes and the reversibility of change (e.g. dissolving, crystallising, decomposing)	<ul style="list-style-type: none"> • Chemical Sciences (ACSSU095) Changes to materials can be reversible, such as melting, freezing or evaporating; or irreversible, such as burning or rusting. 	<ul style="list-style-type: none"> • Chemical sciences (ACSSU113) Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques 	<ul style="list-style-type: none"> • Chemical sciences (ACSSU225) Chemical change involves substances reacting to form new substances

19.EA.9	the cell as the basic unit of all living things	•	•	<ul style="list-style-type: none"> • Biological sciences <p>(ACSSU149) Cells are the basic units of living things and have specialised structures and functions</p>
19.EA.10	biological classification systems and their applications	•	<ul style="list-style-type: none"> • Biological sciences <p>(ACSSU111) There are differences within and between groups of organisms; classification helps organise this diversity</p>	
19.EA.11	why some living things are better suited to their environment than others	<ul style="list-style-type: none"> • Biological Sciences <p>(ACSSU094) The growth a survival of living things are affected by the physical conditions of their environment</p>	•	•
19.EA.12	food chains and webs as models of relationships within living communities	•	<ul style="list-style-type: none"> • Biological sciences <p>(ACSSU112) Interactions between organisms, , can be described in terms of food chains and food webs; human activity can affect these interactions</p>	

<p>19.EA.13</p>	<p>relationships between the Earth, moon and sun and the existence of gravitational attraction between all the objects in the solar system</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Earth and space sciences <p>(ACSSU115) Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon</p> <ul style="list-style-type: none"> • Physical Sciences <p>(ACSSU118) Earth's gravity pulls objects towards the centre of the Earth</p>	<ul style="list-style-type: none"> •
<p>19.EA.14</p>	<p>Earth's changes occurring over different time scales and use of geological evidence to interpret past events</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Earth and space sciences <p>(ACSSU153) Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within the Earth over a variety of timescales</p>
<p>19.EA.15</p>	<p>explore, identify and model relationships (e.g. solar system, food chains and webs) to explain interrelationships and predict change</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Biological sciences <p>(ACSSU112) Interactions between organisms, can be described in terms of food chains and food webs; human activity can affect these interactions</p>	<ul style="list-style-type: none"> •

19.EA.16	apply scientific knowledge and language in interpreting information and forming explanations, arguments and lines of reasoning	•	•	•
19.EA.17	safely and correctly use laboratory equipment	<ul style="list-style-type: none"> • Planning and conducting (AC SIS105) Use equipment and materials safely, identifying potential risks 	•	•
19.EA.18	use their scientific understandings to consider and respond to appropriate ethical and social issues relevant to them (e.g. those related to health and well-being)	<ul style="list-style-type: none"> • Use and Influence of science (AC SHE220) Scientific knowledge is used to inform personal and community decisions 	•	•
NEW MATERIAL	<ul style="list-style-type: none"> • Earth and Space Sciences (AC SSU096) Sudden geological changes or extreme weather conditions can affect the Earth's surface 	<ul style="list-style-type: none"> • Earth and space sciences (AC SSU222) Water is an important resource that cycles through the environment 	<ul style="list-style-type: none"> • Biological sciences (AC SSU150) Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce 	

		•	•	<ul style="list-style-type: none"> Chemical sciences (ACSSU152) Differences between elements, compounds and mixtures can be described at a particle level
			<ul style="list-style-type: none"> Nature and development of science (ACSHE223) Science knowledge can develop through collaboration and connecting ideas across the disciplines of science 	<ul style="list-style-type: none"> Nature and development of science (ACSHE226) Science knowledge can develop through collaboration and connecting ideas across the disciplines of science
Every chance to learn	Australian Curriculum			
2. The student understands and applies the inquiry process	AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills			
	Year 6	Year 7	Year 8	
2 EA.1	understand variations of the inquiry process used in particular disciplines (e.g. in historical research, scientific testing, mathematical analysis)	•	•	•

<p>2.EA.2</p>	<p>select and use appropriate forms of the inquiry process for particular purposes, including a range of investigative, modelling and problem-solving strategies</p>	<ul style="list-style-type: none"> • Planning and conducting (AC SIS103) With guidance, select appropriate investigation methods to answer questions or solve problems 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.EA.3</p>	<p>formulate questions, predictions or propositions suitable for investigation and clarify the inquiry focus</p>	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS232) With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS124) Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge 	<ul style="list-style-type: none"> • Questioning and predicting (AC SIS139) Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge
<p>2.EA.4</p>	<p>plan steps to conduct the inquiry, including equipment, safety, time and level of collaboration required</p>	<ul style="list-style-type: none"> • Planning and conducting 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS125) Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS140) Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed

2 EA.5	determine data or information needs and devise suitable methods to collect the data or information required	<ul style="list-style-type: none"> • Planning and conducting (AC SIS103) With guidance, select appropriate investigation methods to answer questions or solve problems • Nature and development of science (ACSHE098) Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena 	•	•
2.EA.6	plan and conduct scientific investigations with an understanding of the requirements of fair testing (e.g. maintain the same conditions, identify the variable to be changed and the variable to be measured)	<ul style="list-style-type: none"> • Planning and conducting (AC SIS104) Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS126) In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS141) In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task
2.EA.7	collect and assemble relevant data or information taking steps to minimise error (e.g. systematic observation, repeated trials)	<ul style="list-style-type: none"> • Processing and analysing data and information (AC SIS107) Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate 	•	•

<p>2.EA.8</p>	<p>access and interpret a range of primary and/or secondary sources of information (e.g. historical documents, images, oral histories, biographies, articles, media sources, statistical data sets)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2 EA.9</p>	<p>evaluate the accuracy, relevance, completeness and credibility of data and information and their sources (e.g. recognise evidence, opinion, bias and perspective; identify credentials of authors or websites)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.EA.10</p>	<p>develop mathematical models, test propositions, hypotheses and conjectures, and identify key assumptions and conditions that apply to working mathematically in different contexts</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

<p>2.EA.11</p>	<p>organise and analyse data or information (e.g. using ICT), summarise and explain patterns in data, or compare and synthesise information from different sources</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS107) Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate</p> <p>(AC SIS221) Compare data with predictions and use as evidence in developing explanations</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS129) Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships , including using digital technologies as appropriate</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS144) Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships , including using digital technologies as appropriate</p>
<p>2.EA.12</p>	<p>review their understanding in light of new information</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2 EA.13</p>	<p>draw reasonable conclusions based on analysis of data and information</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS221) Compare data with predictions and use as evidence in developing explanations</p> <ul style="list-style-type: none"> • Nature and development of science <p>(AC SHE098) Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS132) Use scientific knowledge and findings from investigations to evaluate claims</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS234) Use scientific knowledge and findings from investigations to evaluate claims</p>

2.EA.14	systematically check reasoning and follow simple deductions to explore the possible truth of mathematical statements and justify generalisations	•	•	•
2.EA.15	present the inquiry focus, problems, background, ideas and approaches and report on results, findings and conclusions using suitable representations and discipline-based terminology	<ul style="list-style-type: none"> • Communicating (AC SIS110) Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts 	<ul style="list-style-type: none"> • Communicating (AC SIS133) Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate 	<ul style="list-style-type: none"> • Communicating (AC SIS148) Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate
2.EA.16	discuss and compare their results with those of others for the same investigation, suggest reasons for any differences, and make suggestions to improve their investigations or conduct further investigations	<ul style="list-style-type: none"> • Processing and analysing data and information (AC SIS221) Compare data with predictions and use as evidence in developing explanations 	<ul style="list-style-type: none"> • Processing and analysing data and information (AC SIS130) Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions 	<ul style="list-style-type: none"> • Processing and analysing data and information (AC SIS145) Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions

2.EA.17	reflect on the appropriateness of methods of presenting data in terms of clarity and/or ease of analysis	<ul style="list-style-type: none"> Evaluating (AC SIS108) Suggest improvements to the methods used to investigate a question and solve a problem. 	<ul style="list-style-type: none"> Evaluating (AC SIS131) Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method 	<ul style="list-style-type: none"> Evaluating (AC SIS146) Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method
2.EA.18	acknowledge sources of information using bibliographies.	•	•	•

Every chance to learn		Australian Curriculum		
20. The student acts for an environmentally sustainable future		AC Strand/s SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills		
		Year 6	Year 7	Year 8
20.EA.1	concepts of interdependence of living things, habitat and ecosystem	•	<ul style="list-style-type: none"> Biological sciences (ACSSU112) Interactions between organisms, , can be described in terms of food chains and food webs; human activity can affect these interactions (Repeats 19.EA.12) 	•

20.EA.2	some of the processes by which human activities change natural environments in positive and negative ways (e.g. reducing feral animal populations, tourism, deforestation)	<ul style="list-style-type: none"> • Biological sciences (ACSSU094) The growth and survival of living things are affected by the physical conditions of their environment 	•	•
20.EA.3	population growth impacts on environmental systems (e.g. urbanisation, locust, cane toad or weed infestation)	•	•	•
20.EA.4	responsibilities of global citizenship for individuals, organisations and governments and the roles and responsibilities of companies, producers and consumers in relation to sustainability	•	•	•
20.EA.5	how countries work together to protect the environment	•	•	•

20.EA.6	conduct case study investigations into local and/or national ecosystems to identify changes and predict their impacts	•	•	•
20.EA.7	compare the use of renewable and non-renewable energy sources and investigate which of Earth's resources they use are reusable, renewable or neither	•	<ul style="list-style-type: none"> • Earth and space sciences (ACSSU116) Some of Earth's resources are renewable, but others are non-renewable 	•
20.EA.8	investigate practical ways for individuals, households or communities to conserve resources (e.g. waste recycling, energy and water saving) and evaluate their practicality and effectiveness	•	•	•
20.EA.9	participate in raising awareness about environmental issues	•	•	•

20.EA.10	examine issues of sustainability of the natural, built or social environment, extending from local to global perspectives (e.g. investigate arguments and studies about climate change and its effects; generate probable, possible and preferred scenarios for future sustainable living)	•	•	•
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Science – Later Adolescence

Every chance to learn		Australian Curriculum	
19. The student understands and applies scientific knowledge		AC Strand/s	
		SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills	
		Year 9	Year 10
19.LA.1	current issues that involve implications of research or applications of science (e.g. Human Genome project)	•	•
19.LA.2	instances in which progress in science can be affected by and influence social issues and priorities (e.g. water purification, alternative energy sources, space exploration, ethics of biotechnology)	<ul style="list-style-type: none"> • Use and influence of science (ACSHE228) The values and needs of contemporary society can influence the focus of scientific research 	<ul style="list-style-type: none"> • Use and influence of science (ACSHE230) The values and needs of contemporary society can influence the focus of scientific research

<p>19.LA.3</p>	<p>scientific advances that challenged understandings and practices in science and everyday life (e.g. causes of disease)</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE157) Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community</p>	<ul style="list-style-type: none"> • Nature and development of science <p>(ACSHE191) Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community</p>
<p>19.LA.4</p>	<p>how contemporary scientists often draw on concepts and processes across scientific disciplines in multi-disciplinary teams and how science can provide rewarding careers</p>	<ul style="list-style-type: none"> • Use and influence of science <p>(ACSHE158) Advances in science and emerging sciences and technologies can significantly affect people's lives including generating new career opportunities</p>	<ul style="list-style-type: none"> • Use and influence of science <p>(ACSHE195) Advances in science and emerging sciences and technologies can significantly affect people's lives including generating new career opportunities</p>
<p>19.LA.5</p>	<p>how people of diverse cultures have contributed to and shaped the development of science</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>19.LA.6</p>	<p>effects of several forces on the motion and energy of objects</p>		<ul style="list-style-type: none"> • Physical sciences <p>(ACSSU229) The motion of objects can be described and predicted using the laws of physics</p>

<p>19.LA.7</p>	<p>how and why the movement of energy (e.g. light and sound) varies according to the medium through which it moves and conservation of energy when it is transformed and transferred</p>	<ul style="list-style-type: none"> • Physical sciences <p>(ACSSU182) Forms of energy can be transferred in a variety of ways through different mediums</p>	<ul style="list-style-type: none"> • Physical sciences <p>(ACSSU190) Energy conservation in a system can be explained by describing energy transfers and transformations</p>
<p>19.LA.8</p>	<p>scientific models and terms to explain the properties of materials, the changes materials undergo and the conservation of matter</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>19.LA.9</p>	<p>explanations of physical and chemical changes in terms of types and arrangements of particles (e.g. atoms, molecules, elements, compounds)</p>	<ul style="list-style-type: none"> • Chemical sciences <p>(ACSSU177) All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms</p> <p>(ACSSU178) Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed</p>	<ul style="list-style-type: none"> • Chemical sciences <p>(ACSSU186) The atomic structure and properties of elements are used to organise them in the Periodic Table</p>

19.LA.10	factors that affect chemical changes (e.g. factors that affect rate) and applications in everyday situations		<ul style="list-style-type: none"> Chemical sciences <p>(ACSSU187) Different types of chemical reactions are used to produce a range of products and can occur at different rates</p>
19.LA.11	how an organism's body systems interact to meet its needs	<ul style="list-style-type: none"> Biological sciences <p>(ACSSU175) Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment</p>	<ul style="list-style-type: none">
19.LA.12	the theory of evolution by natural selection to explain the diversity of living things and how inherited characteristics are passed from parent to offspring	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Biological sciences <p>(ACSSU184) The transmission of heritable characteristics from one generation to the next involves DNA and genes</p> <p>(ACSSU185) The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence</p>
19.LA.13	scientific concepts and models to explain the interdependence of populations of organisms and the environment, and to predict the consequences of changes to an ecosystem	<ul style="list-style-type: none"> Biological sciences <p>(ACSSU176) Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems</p>	

19.LA.14	scientific theories of the origin of the universe	•	<ul style="list-style-type: none"> • Earth and space sciences <p>(ACSSU188) The universe contains features including galaxies, stars and solar systems and the Big Bang theory can be used to explain the origin the universe</p>
19.LA.15	the theory of plate tectonics to explain global patterns of geological activity (e.g. earthquake and volcanic zones)	<ul style="list-style-type: none"> • Earth and space sciences <p>(ACSSU180) The theory of plate tectonics explains global patterns of geological activity and continental movement</p>	
19.LA.16	causes and consequences of global atmospheric changes resulting from natural and human activity (e.g. climate change)	•	<ul style="list-style-type: none"> • Earth and space sciences <p>(ACSSU189) Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere</p>
19.LA.17	examine, question and consider scientific ideas, concepts and theories	•	•

19.LA.18	analyse and synthesise information, and use scientific models and terms to explain properties and interrelationships and to predict change in phenomena and systems	•	•
19.LA.19	apply scientific knowledge in exploring and constructing views around ethical and social issues relating to science (e.g. genetic modification, stem cell research, animal testing of products, nuclear energy)	•	•
19.LA.20	select laboratory equipment appropriate to an investigation and use it safely and correctly	<ul style="list-style-type: none"> • Planning and conducting (AC SIS166) Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS200) Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data
NEW MATERIAL	<ul style="list-style-type: none"> • Chemical sciences (AC SSU179) Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer]	

Every chance to learn		Australian Curriculum	
2. The student understands and applies the inquiry process		AC Strand/s	
		SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills	
		Year 9	Year 10
2.LA.1	understand the possibility of multiple perspectives and partial explanations of phenomena being investigated	<ul style="list-style-type: none"> Use and influence of science (ACSHE160) People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions 	<ul style="list-style-type: none"> Use and influence of science (ACSHE194) People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions
2.LA.2	understand the nature of a controlled experiment and when it might be necessary to conduct one	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
2.LA.3	formulate questions, hypotheses, propositions and conjecture suitable for testing or investigation in relevant disciplines and frame these to clarify the purpose and scope of the inquiry	<ul style="list-style-type: none"> Questioning and predicting (AC SIS164) Formulate questions or hypotheses that can be investigated scientifically 	<ul style="list-style-type: none"> Questioning and predicting (AC SIS198) Formulate questions or hypotheses that can be investigated scientifically

<p>2.LA.4</p>	<p>compare and select suitable models or inquiry forms, prepare plans for managing and monitoring investigations (e.g. level of collaboration and allocation of tasks) and record any adjustments to their plans (e.g. using an inquiry journal, spreadsheet or flow chart)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.LA.5</p>	<p>identify key features of the context for investigation (e.g. concepts, assumptions, conditions, variables, principles of fair testing, level of precision required)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.LA.6</p>	<p>decide on the most suitable methods, including safe use of equipment and selection of suitable technologies, for collecting, managing and analysing data and information, and for communicating findings</p>	<ul style="list-style-type: none"> • Planning and conducting (AC SIS165) Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods 	<ul style="list-style-type: none"> • Planning and conducting (AC SIS199) Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods

<p>2.LA.7</p>	<p>identify sources and collect data and information in systematic ways to improve reliability (e.g. use refined searches to locate a range of relevant sources, control variables, use repeat trials and replication of experiments with appropriate sample sizes, seek counter-examples or explore proofs to verify truth of propositions)</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS172) Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS172) Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems</p>
<p>2.LA.8</p>	<p>manage and organise data and information in ways that assist in their interpretation, analysis and synthesis</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.LA.9</p>	<p>routinely evaluate data and information and their sources for accuracy, relevance, reliability, completeness, authenticity and credibility</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS171) Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data</p>	<ul style="list-style-type: none"> • Evaluating <p>(AC SIS171) Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data</p>

<p>2.LA.10</p>	<p>explain trends, patterns, relationships and discrepancies in data and information</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS169) Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS169) Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies</p>
<p>2.LA.11</p>	<p>draw conclusions that are consistent with the data or information and provide evidence or supporting details</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS170) Use knowledge of scientific concepts to draw conclusions that are consistent with evidence</p>	<ul style="list-style-type: none"> • Processing and analysing data and information <p>(AC SIS170) Use knowledge of scientific concepts to draw conclusions that are consistent with evidence</p>
<p>2.LA.12</p>	<p>apply mathematical skills and logical processes to make deductions, and to verify and generalise their reasoning</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>2.LA.13</p>	<p>present and discuss their investigation using appropriate representations, conventions and terminology specific to the discipline</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS174) Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations</p>	<ul style="list-style-type: none"> • Communicating <p>(AC SIS174) Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations</p>
<p>2.LA.14</p>	<p>evaluate methodologies, reasoning and conclusions, and discuss specific improvements to their investigation or ways to conduct further investigations</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

2.LA.15	document sources of information using reference lists, in-text referencing and captions on images, tables and figures	•	•
2.LA.16	relate their own investigative experiences to the way in which experts in the discipline use evidence to modify explanations and models.	•	•

Every chance to learn		Australian Curriculum	
20. The student acts for an environmentally sustainable future		AC Strand/s	
		SU = science understanding SHE = Science as a Human Endeavour SIS = Science Inquiry Skills	
		Year 9	Year 10
20.LA.1	key concepts used in contemporary information and debates about environmental sustainability (e.g. biodiversity, carrying capacity, ecological footprint, preservation, conservation, wilderness, heritage, sustainable development)	•	•
20.LA.2	events that have significant effects on regional or global ecosystems and their related environmental, social or economic consequences (e.g. drought, cyclones, bushfires, earthquakes, El Nino, climate change)	•	•

20.LA.3	how environmental decision-making often involves dealing with conflicting values and interests of different individuals or groups (e.g. preservation of wilderness, development of non-renewable and renewable resources)	•	•
20.LA.4	how people's views on the environment influence government policy and non-government organisations, and the ways in which governments attempt to address issues of development and sustainability	•	•

<p>20.LA.5</p>	<p>apply relevant scientific understandings to form personal views and make responsible and informed decisions about issues concerning sustainability (e.g. salinity, nuclear energy production, land degradation)</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>20.LA.6</p>	<p>consider and explain their own decisions about lifestyle choices and participation in social actions for environmental sustainability</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>20.LA.7</p>	<p>examine examples of individual and global actions to create sustainable futures, assess the strengths and limitations of these, and propose further appropriate actions</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •