



Western Australian Curriculum

Science | P–10

**Science elaborations for the Aboriginal and Torres Strait
Islander cross-curriculum priority**

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Science elaborations addressing Aboriginal and Torres Strait Islander Histories and Cultures

Note to teachers:

In response to feedback from community and educators Australian Curriculum, Assessment and Reporting Authority (ACARA) developed 95 new elaborations with accompanying teacher background information to help teachers to incorporate the Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority in the Australian Curriculum: Science.

These elaborations were developed with the assistance of ACARA's Aboriginal and Torres Strait Islander Advisory Group and Taskforce, and Science and Aboriginal and Torres Strait Islander curriculum specialists, and provide practical examples across all three strands of the science curriculum and all year levels.

The purpose of the Science elaborations, addressing Aboriginal and Torres Strait Islander Histories and Cultures, is to offer opportunities to add depth and richness to student learning within the Science curriculum. The elaborations acknowledge that Aboriginal Peoples and Torres Strait Islander Peoples have worked scientifically for millennia and continue to contribute to contemporary science. They are scientifically rigorous, demonstrating how Indigenous history, culture, knowledge and understanding can be incorporated into teaching core scientific concepts.

The Science elaborations illustrate and exemplify content and assist teachers to develop a common understanding of the content descriptions. They are not intended to be comprehensive content points that all students need to be taught or assessed on.

Each elaboration is accompanied by teacher background information that explains in detail the cultural and historical significance of the chosen topic and how it connects to the core science curriculum content. It also includes a list of consulted works, provided as evidence of the research undertaken to inform the development of the teacher background information. The teacher background information is accessible through the Aboriginal and Torres Strait Islander Histories and Cultures icon appearing next to the elaboration and will take you to the Australian Curriculum website.

The elaborations and accompanying teacher background information support teachers in providing a more culturally responsive curriculum experience for Aboriginal and Torres Strait Islander students resulting in increased engagement and better educational outcomes. They also provide an opportunity for all students to deepen their knowledge of Australia by engaging with the world's oldest continuous living cultures. Through the Australian Curriculum, students will understand that contemporary Aboriginal and Torres Strait Islander communities are strong, resilient, rich and diverse.

In the Science learning area students will have opportunities to learn that Aboriginal and Torres Strait Islander Peoples have longstanding scientific knowledge traditions and developed knowledge about the world by:

- observation, using all the senses
- prediction and hypothesis
- testing (trial and error)
- making generalisations within specific contexts such as the use of food, natural materials, navigation and sustainability of the environment.

Strand – Sub-strand		Content description	Aboriginal and Torres Strait Islander cross-curriculum priority elaboration
Pre-primary			
1	SU Biological sciences	Living things have basic needs, including food and water (ACSSU002)	<ul style="list-style-type: none"> recognising how Aboriginal and Torres Strait Islander Peoples care for living things
2	SU Physical sciences	The way objects move depends on a variety of factors, including their size and shape (ACSSU005)	<ul style="list-style-type: none"> exploring how the size and shape of traditional instructive toys used by Aboriginal and Torres Strait Islander Peoples influence their movement
3	SU Earth and space sciences	Daily and seasonal changes in our environment affect everyday life (ACSSU004)	<ul style="list-style-type: none"> learning how Aboriginal and Torres Strait Islander Peoples' concepts of time and weather patterns explain how things happen in the world around them
4	SHE Nature and development of science	Science involves observing, asking questions about, and describing changes in, objects and events (ACSHE013)	<ul style="list-style-type: none"> recognising how Aboriginal and Torres Strait Islander Peoples gain knowledge about the land and its vital resources, such as water and food, through observation
Year 1			
5	SU Biological sciences	Living things have a variety of external features (ACSSU017)	<ul style="list-style-type: none"> exploring how Aboriginal and Torres Strait Islander Peoples' observations of external features of living things are mimicked and replicated in traditional dance
6	SU Chemical sciences	Everyday materials can be physically changed in a variety of ways (ACSSU018)	<ul style="list-style-type: none"> exploring how Aboriginal and Torres Strait Islander Peoples apply physical changes to natural materials to render them useful for particular purposes
7	SU Earth and space sciences	Observable changes occur in the sky and landscape (ACSSU019)	<ul style="list-style-type: none"> recognising the extensive knowledge of daily and seasonal changes in weather patterns and landscape held by Aboriginal and Torres Strait Islander Peoples
8	SU Physical sciences	Light and sound are produced by a range of sources and can be sensed (ACSSU020)	<ul style="list-style-type: none"> exploring how traditional musical instruments used by Aboriginal and Torres Strait Islander Peoples produce their characteristic sounds
9	SHE Nature and development of science	Science involves observing, asking questions about, and describing changes in, objects and events (ACSHE021)	<ul style="list-style-type: none"> recognising how Aboriginal and Torres Strait Islander Peoples use changes in the landscape and the sky to answer questions about when to gather certain resources

Strand – Sub-strand		Content description	Aboriginal and Torres Strait Islander cross-curriculum priority elaboration
10	SHE Use and influence of science	People use science in their daily lives, including when caring for their environment and living things (ACSHE022)	<ul style="list-style-type: none"> considering that technologies used by Aboriginal and Torres Strait Islander Peoples require an understanding of how materials can be sustainably sourced to make tools and weapons, musical instruments, clothing, cosmetics and artworks
11	SIS Communicating	Represent and communicate observations and ideas in a variety of ways (ACSIS029)	<ul style="list-style-type: none"> acknowledging and learning about Aboriginal and Torres Strait Islander Peoples' ways of representing and sharing observations
12	SIS Evaluating	Compare observations with those of others (ACSIS213)	<ul style="list-style-type: none"> consulting with Aboriginal and Torres Strait Islander Peoples to compare observations and evaluate identifications of animal tracks
Year 2			
13	SU Chemical sciences	Different materials can be combined for a particular purpose (ACSSU031)	<ul style="list-style-type: none"> investigating the ways in which Aboriginal and Torres Strait Islander Peoples combine different materials to produce utensils (hafting, weaving, sewing and gluing)
14	SU Earth and space sciences	Earth's resources are used in a variety of ways (ACSSU032)	<ul style="list-style-type: none"> considering how Aboriginal and Torres Strait Islander Peoples live in regions with scarce resources or in sensitive environments
15	SU Physical sciences	A push or a pull affects how an object moves or changes shape (ACSSU033)	<ul style="list-style-type: none"> investigating the push and pull movements of traditional Aboriginal and Torres Strait Islander children's instructive toys
16	SHE Nature and development of science	Science involves observing, asking questions about, and describing changes in, objects and events (ACSHE034)	<ul style="list-style-type: none"> recognising how Aboriginal and Torres Strait Islander Peoples observe and describe developmental changes in living organisms and answer questions about when to harvest certain resources
17	SHE Use and influence of science	People use science in their daily lives, including when caring for their environment and living things (ACSHE035)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples use science to meet their needs, such as food supply.
Year 3			
18	SU Biological sciences	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' systems of classifying living things and how these systems differ from those used by contemporary science

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19	SU Biological sciences	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044)	<ul style="list-style-type: none"> recognising Aboriginal and Torres Strait Islander Peoples' use of observable features to group living things
20	SU Chemical sciences	A change of state between solid and liquid can be caused by adding or removing heat (ACSSU046)	<ul style="list-style-type: none"> investigating how changes of state in materials used by Aboriginal and Torres Strait Islander Peoples, such as beeswax or resins, are important for their use.
21	SU Earth and space sciences	Earth's rotation on its axis causes regular changes, including night and day (ACSSU048)	<ul style="list-style-type: none"> exploring how cultural stories of Aboriginal and Torres Strait Islander Peoples explain the cyclic phenomena involving sun, moon and stars and how those explanations differ from contemporary science understanding
22	SU Physical sciences	Heat can be produced in many ways and can move from one object to another (ACSSU049)	<ul style="list-style-type: none"> investigating the production and transfer of heat in Aboriginal and Torres Strait Islander Peoples' methods of cooking, such as the use of ground ovens
23	SHE Nature and development of science	Science involves making predictions and describing patterns and relationships (ACSHE050)	<ul style="list-style-type: none"> researching how knowledge of astronomy has been used by some Aboriginal and Torres Strait Islander Peoples
24	SHE Use and influence of science	Science knowledge helps people to understand the effect of their actions (ACSHE051)	<ul style="list-style-type: none"> researching Aboriginal and Torres Strait Islander Peoples' knowledge of the local natural environment, such as the characteristics of plants and animals
25	SIS Communicating	Represent and communicate observations, ideas and findings using formal and informal representations (AC SIS060)	<ul style="list-style-type: none"> consulting Aboriginal and Torres Strait Islander Peoples' representations of living things as evidenced and communicated through formal and informal sharing of information
26	SIS Communicating	Represent and communicate observations, ideas and findings using formal and informal representations (AC SIS060)	<ul style="list-style-type: none"> acknowledging and exploring Aboriginal and Torres Strait Islander Peoples' ways of communicating information about anatomical features of organisms
27	SIS Planning and conducting	With guidance, plan and conduct scientific investigations to find answers to questions, considering the safe use of appropriate materials and equipment (AC SIS054)	<ul style="list-style-type: none"> consulting with Aboriginal and Torres Strait Islander Peoples to guide the planning of scientific investigations, including safety considerations for field investigations

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28	SIS Questioning and predicting	With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge (AC SIS053)	<ul style="list-style-type: none"> consulting with and using existing knowledge held by Aboriginal and Torres Strait Islander Peoples to guide the formulation of investigable questions regarding invasive species
Year 4			
29	SU Biological sciences	Living things have life cycles (ACSSU072)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples understand and utilise the life cycles of certain species
30	SU Biological sciences	Living things depend on each other and the environment to survive (ACSSU073)	<ul style="list-style-type: none"> recognising how Aboriginal and Torres Strait Islander Peoples perceive themselves as being an integral part of the environment
31	SU Chemical sciences	Natural and processed materials have a range of physical properties that can influence their use (ACSSU074)	<ul style="list-style-type: none"> considering how Aboriginal and Torres Strait Islander Peoples use natural and processed materials for different purposes, such as tools, clothing and shelter, based on their properties
32	SU Chemical sciences	Natural and processed materials have a range of physical properties that can influence their use (ACSSU074)	<ul style="list-style-type: none"> considering how Aboriginal and Torres Strait Islander Peoples' knowledge of natural and processed materials informs the preparation of effective, vibrant and long-lasting paints
33	SU Earth and space sciences	Earth's surface changes over time as a result of natural processes and human activity (ACSSU075)	<ul style="list-style-type: none"> considering how Aboriginal and Torres Strait Islander Peoples' fire management practices over tens of thousands of years have changed the distribution of flora and fauna in most regions of Australia
34	SU Physical sciences	Forces can be exerted by one object on another through direct contact or from a distance (ACSSU076)	<ul style="list-style-type: none"> investigating the effect of contact and non-contact forces on the movement of objects in traditional Aboriginal and Torres Strait Islander children's instructive toys and games
35	SHE Nature and development of science	Science involves making predictions and describing patterns and relationships (ACSHE061)	<ul style="list-style-type: none"> considering how scientific practices, such as sorting, classification and estimation are used by Aboriginal and Torres Strait Islander Peoples in everyday life
36	SIS Questioning and predicting	With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge (AC SIS064)	<ul style="list-style-type: none"> acknowledging and using information from Aboriginal and Torres Strait Islander Peoples to guide the formulation of investigable questions regarding life cycles

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Year 5			
37	SU Biological sciences	Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' knowledge of the adaptations of certain species and how those adaptations can be exploited
38	SU Chemical sciences	Solids, liquids and gases have different observable properties and behave in different ways (ACSSU077)	<ul style="list-style-type: none"> recognising Aboriginal and Torres Strait Islander Peoples' knowledge and understanding of evaporation and how the effect of evaporation can be reduced to conserve water, such as by covering surfaces
39	SU Chemical sciences	Solids, liquids and gases have different observable properties and behave in different ways (ACSSU077)	<ul style="list-style-type: none"> recognising Aboriginal and Torres Strait Islander Peoples' knowledge and understanding of solids, liquids, gases
40	SU Earth and space sciences	The Earth is part of a system of planets orbiting around a star (the sun) (ACSSU078)	<ul style="list-style-type: none"> researching Aboriginal and Torres Strait Islander Peoples' understanding of the night sky and its use for timekeeping purposes as evidenced in oral cultural records, petroglyphs, paintings and stone arrangements
41	SU Physical sciences	Light from a source forms shadows and can be absorbed, reflected and refracted (ACSSU080)	<ul style="list-style-type: none"> recognising Aboriginal and Torres Strait Islander Peoples' understanding of refraction as experienced in spear fishing and in shimmering body paint, and of absorption and reflection as evidenced by material selected for construction of housing
42	SHE Use and influence of science	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples' traditional ecological and zoological knowledge informs sustainable harvesting practices of certain species, such as dugongs and turtles
43	SHE Use and influence of science	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE083)	<ul style="list-style-type: none"> investigating how Torres Strait Islander Peoples and Aboriginal Peoples of arid regions of Australia use scientific knowledge to manage precious water resources
44	SHE Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE081)	<ul style="list-style-type: none"> learning how Aboriginal and Torres Strait Islander Peoples use observation of the night sky to assist with navigation

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45	SIS Planning and conducting	Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (ACSIS086)	<ul style="list-style-type: none"> consulting with Aboriginal and Torres Strait Islander Peoples to guide the planning of scientific investigations, considering potential risks for field investigations
46	SIS Communicating	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS093)	<ul style="list-style-type: none"> acknowledging and exploring Aboriginal and Torres Strait Islander Peoples' ways of representing and communicating information about anatomical features, including structural adaptations
47	SIS Questioning and predicting	With guidance, pose clarifying questions and make predictions about scientific investigations (ACSIS231)	<ul style="list-style-type: none"> acknowledging and using information from Aboriginal and Torres Strait Islander Peoples to guide the formulation of investigable questions about adaptations
Year 6			
48	SU Biological sciences	The growth and survival of living things are affected by physical conditions of their environment (ACSSU094)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' knowledge and understanding of the physical conditions necessary for the survival of certain plants and animals in the environment
49	SU Chemical sciences	Changes to materials can be reversible or irreversible (ACSSU095)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' knowledge of reversible processes, such as the application of adhesives, and of irreversible processes, such as the use of fuels for torches
50	SU Earth and space sciences	Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096)	<ul style="list-style-type: none"> researching Aboriginal and Torres Strait Islander Peoples' cultural stories that provide evidence of geological events
51	SHE Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples test predictions and gather data in the development of technologies and processes
52	SHE Use and influence of science	Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)	<ul style="list-style-type: none"> discussing how modern approaches to fire ecology in Australia are being informed by Aboriginal and Torres Strait Islander Peoples' traditional ecological knowledge and fire management practices

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53	SHE Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098)	<ul style="list-style-type: none"> learning how Aboriginal and Torres Strait Islander Peoples' knowledge, such as the medicinal and nutritional properties of Australian plants, is being used as part of the evidence base for scientific advances
54	SIS Questioning and predicting	With guidance, pose clarifying questions and make predictions about scientific investigations (ACSIS232)	<ul style="list-style-type: none"> consulting with Aboriginal and Torres Strait Islander Peoples to clarify investigable questions based upon their traditional ecological knowledge, such as predictions regarding the impact of invasive species
Year 7			
55	SU Biological sciences	Classification helps organise the diverse group of organisms (ACSSU111)	<ul style="list-style-type: none"> investigating classification systems used by Aboriginal and Torres Strait Islander Peoples and how they differ with respect to approach and purpose from those used by contemporary science
56	SU Biological sciences	Interactions between organisms, including the effects of human activities can be represented by food chains and food webs (ACSSU112)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' responses to the disruptive interactions of invasive species and their effect on important food webs that many communities are a part of, and depend on, for produce and medicine
57	SU Chemical sciences	Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)	<ul style="list-style-type: none"> investigating separation techniques used by Aboriginal and Torres Strait Islander Peoples, such as hand picking, sieving, winnowing, yandying, filtering, cold pressing and steam distilling
58	SU Earth and space sciences	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)	<ul style="list-style-type: none"> researching Aboriginal and Torres Strait Islander Peoples' oral traditions and cultural recordings of solar and lunar eclipses and investigating similarities and differences with contemporary understandings of such phenomena
59	SU Earth and space sciences	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)	<ul style="list-style-type: none"> researching knowledges held by Aboriginal and Torres Strait Islander Peoples regarding the phases of the moon and the connection between the lunar cycle and ocean tides

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60	SU Earth and space sciences	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' calendars and how they are used to predict seasonal changes
61	SU Earth and space sciences	Some of Earth's resources are renewable, including water that cycles through the environment, but others are non-renewable (ACSSU116)	<ul style="list-style-type: none"> exploring Aboriginal and Torres Strait Islander Peoples' connections with, and valuing of, water and water resource management
62	SU Physical sciences	Change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object (ACSSU117)	<ul style="list-style-type: none"> investigating the effect of forces through the application of simple machines, such as the bow and arrows used by Torres Strait Islander Peoples or the spear throwers used by Aboriginal Peoples
63	SHE Nature and development of science	Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available (ACSHE119)	<ul style="list-style-type: none"> investigating the contributions of Aboriginal and Torres Strait Islander Peoples' knowledge in the identification of medicinal and endemic plants
64	SHE Use and influence of science	Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE120)	<ul style="list-style-type: none"> researching the development of commercial products that are founded on the traditional knowledge and practices of Aboriginal and Torres Strait Islander Peoples and discussing related ethical considerations associated with biopiracy and intellectual property rights
65	SHE Nature and development of science	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE223)	<ul style="list-style-type: none"> investigating how land management practices of Aboriginal and Torres Strait Islander Peoples informs sustainable management of the environment to protect biodiversity
66	SHE Use and influence of science	People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE121)	<ul style="list-style-type: none"> investigating how the knowledge and experience of Aboriginal and Torres Strait Islander Peoples are being used to inform scientific decisions, such as the care of Country/Place
67	SIS Planning and conducting	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander Peoples in planning scientific investigations, and seeking guidance regarding culturally sensitive locations during fieldwork

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68	SIS Planning and conducting	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (AC SIS125)	<ul style="list-style-type: none"> consulting with Aboriginal and Torres Strait Islander land councils in planning scientific investigations, and seeking guidance regarding land access rights
69	SIS Planning and conducting	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (AC SIS125)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander communities and organisations to conduct research investigations about ecosystems, ensuring mutually beneficial outcomes
70	SIS Processing and analysing data and information	Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence (AC SIS130)	<ul style="list-style-type: none"> acknowledging, analysing and interpreting data and information from Aboriginal and Torres Strait Islander Peoples' understandings of the Earth's systems and cycles
71	SIS Processing and analysing data and information	Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate (AC SIS129)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander Peoples in the production of calendars that demonstrate seasonal patterns and relationships using digital technologies
Year 8			
72	SU Chemical sciences	Chemical change involves substances reacting to form new substances (AC SSU225)	<ul style="list-style-type: none"> investigating chemical reactions employed by Aboriginal and Torres Strait Islander Peoples in the production of substances such as quicklime, plaster, pigments, acids, salts and ethanol
73	SU Earth and space sciences	Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales (AC SSU153)	<ul style="list-style-type: none"> exploring the traditional geological knowledge of Aboriginal and Torres Strait Islander Peoples that is used in the selection of different rock types for different purposes
74	SU Physical sciences	Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems (AC SSU155)	<ul style="list-style-type: none"> investigating traditional fire-starting methods used by Aboriginal and Torres Strait Islander Peoples and their understanding of the transformation of energy

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75	SHE Nature and development of science	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE226)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples connect knowledge from the disciplines of physics, chemistry, biology and geology in the development of material culture
76	SHE Nature and development of science	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures (ACSHE226)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples employ knowledge from the disciplines of chemistry, biology, physics and geology in their development of pigments and dyes
77	SHE Use and influence of science	Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE135)	<ul style="list-style-type: none"> investigating use of sustainable technologies to deliver basic services in remote Aboriginal and Torres Strait Islander communities and considering ethical implications of these
78	SHE Use and influence of science	People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity (ACSHE136)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples used scientific understandings of complex ecological relationships to develop specific fire based agricultural practices
79	SIS Planning and conducting	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS140)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander Peoples in the planning of scientific investigations, including considerations of heritage sites and artefacts
Year 9			
80	SU Biological sciences	Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)	<ul style="list-style-type: none"> investigating the interdependence of communities and the role of Aboriginal and Torres Strait Islander Peoples in maintaining their environment
81	SU Chemical sciences	All matter is made of atoms that are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)	<ul style="list-style-type: none"> investigating how radiocarbon and other dating methods have been used to establish that Aboriginal Peoples have been present on the Australian continent for more than 60,000 years
82	SU Chemical sciences	Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples use fire-mediated chemical reactions to facilitate energy and nutrient transfer in ecosystems through the practice of firestick farming

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83	SU Physical sciences	Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	<ul style="list-style-type: none"> investigating the impact of material selection on the transfer of sound energy in Aboriginal and Torres Strait Islander Peoples' traditional musical, hunting and communication instruments
84	SU Physical sciences	Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	<ul style="list-style-type: none"> investigating aspects of heat transfer and conservation in the design of Aboriginal and Torres Strait Islander Peoples' bedding and clothing in the various climatic regions of Australia
85	SHE Nature and development of science	Scientific understanding, including models and theories, is contestable and is refined over time through a process of review by the scientific community (ACSHE157)	<ul style="list-style-type: none"> investigating how fire research has evaluated the effects of traditional Aboriginal and Torres Strait Islander Peoples fire regimes and how these findings have influenced fire management policy throughout Australia
86	SHE Nature and development of science	Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE158)	<ul style="list-style-type: none"> researching how technological advances in monitoring greenhouse gas emissions and other environmental factors have contributed to the reinstatement of traditional fire management practices as a strategy to reduce atmospheric pollution
87	SHE Use and influence of science	People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities (ACSHE160)	<ul style="list-style-type: none"> considering how the traditional ecological knowledge of Aboriginal and Torres Strait Islander Peoples is being reaffirmed by modern science and how this is generating new career opportunities in the field of restorative ecology
88	SHE Use and influence of science	Values and needs of contemporary society can influence the focus of scientific research (ACSHE228)	<ul style="list-style-type: none"> researching how Torres Strait Islander Peoples are at the forefront of the development of scientific measures to prevent the transfer of certain infectious diseases and pests to the Australian continent
89	SIS Processing and analysing data and information	Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)	<ul style="list-style-type: none"> consulting Aboriginal and Torres Strait Islander Peoples' histories and cultures that reveal scientific information about the past

Strand – Sub-strand		Content description	Aboriginal and Torres Strait Islander cross-curriculum priority elaboration
90	SIS Communicating	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)	<ul style="list-style-type: none"> acknowledging and exploring Aboriginal and Torres Strait Islander Peoples' ways of communicating their understanding of the internal systems of organisms
91	SIS Planning and conducting	Plan, select and use appropriate investigation types, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS165)	<ul style="list-style-type: none"> acknowledging cultural heritage protection Acts as they relate to Aboriginal and Torres Strait Islander Peoples in planning field investigations
92	SIS Processing and analysing data and information	Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)	<ul style="list-style-type: none"> acknowledging and identifying the relationship between First Peoples' knowledges and contemporary science and the co-contributions in arriving at shared understanding when working "both-ways"
93	SIS Questioning and predicting	Formulate questions or hypotheses that can be investigated scientifically (ACSIS164)	<ul style="list-style-type: none"> acknowledging and using information from Aboriginal and Torres Strait Islander Peoples to hypothesise about fauna or flora distributions
94	SIS Questioning and predicting	Formulate questions or hypotheses that can be investigated scientifically (ACSIS164)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander Peoples to formulate questions and hypotheses that can be investigated scientifically regarding disrupted ecosystems
Year 10			
95	SU Biological sciences	Transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)	<ul style="list-style-type: none"> investigating Aboriginal and Torres Strait Islander Peoples' knowledge of heredity as evidenced by the strict adherence to kinship and family structures, especially marriage laws
96	SU Biological sciences	The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185)	<ul style="list-style-type: none"> investigating some of the structural and physiological adaptations of Aboriginal and Torres Strait Islander Peoples to the Australian environment
97	SU Chemical sciences	Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> investigating some of the chemical reactions and methods employed by Aboriginal and Torres Strait Islander Peoples to convert toxic plants into edible food products

Strand – Sub-strand		Content description	Aboriginal and Torres Strait Islander cross-curriculum priority elaboration
98	SU Earth and space sciences	The universe contains features, including galaxies, stars and solar systems, and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)	<ul style="list-style-type: none"> researching Aboriginal and Torres Strait Islander Peoples' knowledge of celestial bodies and explanations of the origin of the universe
99	SU Earth and space sciences	Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples are reducing Australia's greenhouse gas emissions through the reinstatement of traditional fire management regimes
100	SU Physical sciences	The motion of objects can be described and predicted using the laws of physics (ACSSU229)	<ul style="list-style-type: none"> investigating how Aboriginal and Torres Strait Islander Peoples achieve an increase in velocity and subsequent impact force through the use of spear throwers and bows
101	SHE Use and influence of science	Values and needs of contemporary society can influence the focus of scientific research (ACSHE230)	<ul style="list-style-type: none"> researching how the values of 19th and early 20th century Australian society, combined with scientific misconceptions about heredity and evolution, influenced policies and attitudes towards Aboriginal and Torres Strait Islander Peoples
102	SHE Nature and development of science	Scientific understanding, including models and theories, is contestable and is refined over time through a process of review by the scientific community (ACSHE191)	<ul style="list-style-type: none"> investigating how, prior to germ theory, Aboriginal and Torres Strait Islander Peoples used their scientific observations to develop traditional medicines to treat wounds and infections of the skin
103	SHE Nature and development of science	Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries (ACSHE192)	<ul style="list-style-type: none"> researching how technological advances in dating methods of Aboriginal Peoples' material culture are contributing to our understanding of the changing climatic conditions and human interaction with Australian megafauna
104	SHE Use and influence of science	People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities (ACSHE194)	<ul style="list-style-type: none"> considering how ecological sciences are recognising the efficacy of traditional ecological practices of Aboriginal and Torres Strait Islander Peoples and how restorative programs based on these practices are generating new career opportunities

Strand – Sub-strand		Content description	Aboriginal and Torres Strait Islander cross-curriculum priority elaboration
105	SHE Use and influence of science	Values and needs of contemporary society can influence the focus of scientific research (ACSHE230)	<ul style="list-style-type: none"> investigating how disease outbreaks and the emergence of drug-resistant infections have focused scientific research into Aboriginal and Torres Strait Islander Peoples' traditional medicines to identify effective therapeutic compounds for the use in pharmaceuticals
106	SIS Planning and conducting	Plan, select and use appropriate investigation types, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS199)	<ul style="list-style-type: none"> collaborating with Aboriginal and Torres Strait Islander Peoples to explore the development of a commercial product based upon traditional ecological knowledge while addressing ethical issues.
107	SIS Evaluating	Critically analyse the validity of information in primary and secondary sources, and evaluate the approaches used to solve problems (ACSIS206)	<ul style="list-style-type: none"> acknowledging the need to critically analyse scientific literature for potential cultural bias towards Aboriginal and Torres Strait Islander Peoples