Geography sample unit (integrated with Life Skills)	Water in the world	Stage 4
		Duration: One term
		(10 weeks – 25 hours)

Unit focus	Key inquiry questions
Students examine water as a resource and the factors influencing water flows and availability of water resources in different places. They investigate the nature of water scarcity and assess ways of overcoming it. Students discuss variations in people's perceptions about the value of water and the need for sustainable water management. Students also investigate processes that continue to shape the environment, including an atmospheric or hydrologic hazard.	• Why does the spatial distribution of water resources vary globally and within countries? • How do natural and human processes influence the distribution and availability of water as a resource? • What effect does the uneven distribution of water resources have on people, places and environments? • What approaches can be used to sustainably manage water resources and reduce water scarcity?

Outcomes

A student:

- locates and describes the diverse features and characteristics of a range of places and environments **GE4-1**
- describes processes and influences that form and transform places and environments **GE4-2**
- explains how interactions and connections between people, places and environments result in change **GE4-3**
- discusses management of places and environments for their sustainability **GE4-5**
- acquires and processes geographical information by selecting and using geographical tools for inquiry **GE4-7**
- communicates geographical information using a variety of strategies **GE4-8**

The following **Life Skills outcomes** have been integrated into this unit:

- recognises features and characteristics of places and environments **GELS-1**
- demonstrates an understanding that places and environments change **GELS-2**
- explores interactions and connections between people, places and environments **GELS-3**
- explores management of places and environments **GELS-5**
- collects and uses geographical information for inquiry **GELS-7**
- communicates geographical information **GELS-8**

Geographical concepts	Geographical skills	Geographical tools
The following **geographical concepts** have been integrated into the lesson sequences: **Place:** *the significance of places and what they are like* **Space:** *the significance of location and spatial distribution, and ways people organise and manage spaces that we live in* **Environment:** *the significance of the environment in human life, and the important interrelationships between humans and the environment* **Interconnection:** *no object of geographical study can be viewed in isolation* **Scale:** *the way that geographical phenomena and problems can be examined at different spatial levels* **Sustainability:** *the capacity of the environment to continue to support our lives and the lives of other living creatures into the future* **Change:** *explaining geographical phenomena by investigating how they have developed over time*	The following **geographical skills** have been integrated into the lesson sequences: **Acquiring geographical information** • develop geographically significant questions and plan an inquiry, using appropriate geographical methodologies and concepts (ACHGS047, ACHGS055) • collect, select and record relevant geographical data and information, using ethical protocols, from appropriate primary data and secondary information sources (ACHGS048, ACHGS056) **Processing geographical information** • evaluate information sources for their reliability and usefulness (ACHGS049, ACHGS057) • represent data in a range of appropriate forms, with and without the use of digital and spatial technologies (ACHGS049, ACHGS057) • analyse geographical data and other information using qualitative and quantitative methods, and digital and spatial technologies as appropriate, to identify and propose explanations for spatial distributions, patterns and trends and infer relationships (ACHGS051, ACHGS059) • apply geographical concepts to draw conclusions based on the analysis of the data and information collected (ACHGS052, ACHGS060) **Communicating geographical information** • present findings, arguments and ideas in a range of communication forms selected to suit a particular audience and purpose; using geographical terminology and digital technologies as appropriate (ACHGS053, ACHGS061) • reflect on their learning to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations, and predict the expected outcomes of their proposal (ACHGS054, ACHGS062) Note: for students following Life Skills outcomes and content, it may be more appropriate to select earlier geographical skills from the continuum.	The following **geographical tools** have been integrated into the lesson sequences: **Maps – M** • sketch maps, relief maps, political maps, topographic maps, flowline maps, choropleth maps, isoline maps, précis maps, cartograms, synoptic charts • maps to identify direction, scale and distance, area and grid references, latitude and longitude, altitude, area, contour lines, gradient, local relief **Fieldwork – F** • observing, measuring, collecting and recording data, developing and conducting surveys and interviews • fieldwork instruments such as weather instruments, vegetation identification charts, compasses, GPS, GIS **Graphs and statistics – GS** • data tables, pie graphs, column graphs, compound column graphs, line graphs, climate graphs, population profiles, multiple tables and graphs presented on a geographical theme, statistics to find patterns and trends **Spatial technologies – ST** • virtual maps, satellite images, global positioning systems (GPS), geographic information systems (GIS) **Visual representations – VR** • photographs, aerial photographs, illustrations, flow charts, annotated diagrams, multimedia, field sketches, cartoons, web tools

Content	Teaching, learning, assessment and resources	Sample adjustments
Water resources Students • investigate the characteristics and spatial distribution of global water resources (ACHGK037)	• Students complete a pre-test of their conceptual knowledge and understanding of water as a natural resource. • Using a stimulus such as the YouTube clips '*Water Facts 1*' www.youtube.com/watch?v=zNdbj3PbX6o and '*Water Facts 2*' www.youtube.com/watch?v=uGrQ6T1hK9A students complete a table such as the example provided to recall and categorise ideas into themes. | Uses	Access
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Change	Threats | • Students interpret selected diagrams, graphs, statistics and maps to draw conclusions about the global availability of freshwater and its spatial distribution (by type and geographical location). **M GS VR** 👆▦ They compare Australia's freshwater availability with other continents. Students classify water as a renewable, non-renewable or continuous resource and identify sources and forms of water used as resources. Students represent and communicate the global availability of freshwater and the ways people use water resources to a particular audience such as young children using an appropriate format. ✿👆 • Working collaboratively, students estimate water use by sector at global and national scales: **Sample table: Water use** | Location	% used in agriculture		% used in industry		% used domestically	
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	Estimated	Actual	Estimated	Actual	Estimated	Actual
World						
Australia						
Indonesia						| • Students discuss influences on people's perceptions of water use, for example media or NGO campaigns. • Students locate and record actual statistics of water use to complete the table. Students review the results and discuss factors which may explain any variations between estimated and actual statistics. Students choose an appropriate graph to represent the data findings. **GS** ✿▦☀ • Students investigate water usage in the provision or manufacture of a service or product from everyday life, such as jeans. Students communicate their findings by creating a linkages diagram, for example a mind map, flow chart, annotated drawing etc. **VR** ☀ Students learn about the concepts of virtual water and water footprints. Students calculate their personal water footprint then compare it to the water footprint of people in other countries and propose appropriate action for the future. 🌱🌏	Students with decoding difficulties will need to have the information from the YouTube clips read aloud. Students outline the global availability of freshwater. With prompting, they complete simple conclusions about the distribution of freshwater. Students view *'Water by the numbers'* www.youtube.com/watch?v=HW5eBfZhE4M or *'Water facts and statistics'* www.youtube.com/watch?v=PjSUg6JsLYw to describe global variations in water. **Extension** Students explain how global trade transfers virtual water between countries.

Content	Teaching, learning, assessment and resources	Sample adjustments
Life Skills content **Water availability** Students • investigate sources of water in the world eg the local environment, Australia and other countries • examine the water cycle • explore how water is a renewable resource • compare the availability of water as a resource in different places **Water for human use** Students • explore different ways in which water is used **Water management** Students • investigate strategies to manage water in familiar environments	**Life Skills** • Students develop a print or online mindmap of sources of water OR create a visual collage of sources of water. • Students identify an example of a source of water in their local environment, in Australia and globally. • Students access a list of facts about water and label or categorise each fact as 'use', 'access' or 'threat'. Water facts may be sourced from: www.waterrecycle.com.au/facts.htm www.prestigewater.com.au/articles/fun-facts-of-water-for-kids.html • Students explore the processes involved in the water cycle. They label a diagram to indicate each process: evaporation, condensation, precipitation and collection. **VR** ⚙ The following website contains useful information about the water cycle: www.kidzone.ws/water/index.html • Students explore the terms 'renewable' and 'non-renewable' and provide reasons why water might be a renewable resource and why it might be a non-renewable resource. 🌱⚙ • Students brainstorm uses of water and then classify the uses into different categories, for example, household, recreation, agriculture. They use a stimulus video to identify additional uses of water and add them to their classification table. Suggested stimulus videos: *'Water by the numbers'* www.youtube.com/watch?v=HW5eBfZhE4M or *'Water facts and statistics'* www.youtube.com/watch?v=PjSUg6JsLYw or *'The global water crisis: How much water do we really use everyday?'* www.youtube.com/watch?v=On9WRrFHVjY&list=PLnpqjxmt4SpukB5pRtp7rDMutKkxkc6pi • Students explore the interactive map of global water consumption and write comparative statements (at least one statement must include Australia), for example, a person in Australia uses **less** water than a person in the US. **M** ⚖🗎✳ chartsbin.com/view/1455 • Using statistics on the percentage of water used for agriculture, industry and households in Australia and two neighbouring countries, students construct a graph to appropriately represent the data. This may be done using print or online graphing tools. **GS** ⚙🗎	

Content	Teaching, learning, assessment and resources	Sample adjustments
Life Skills content (continued)	• Students explore a range of water campaigns to identify a water issue (sanitation, consumption, access) and the methods used to respond to the issue (competition, petition, raising awareness through social media). Students identify ways they can respond or contribute to a solution for the water issue. Examples of campaigns that may be explored include: ⚡ 🖥 🦘 *WaterAid Australia* www.wateraid.org/au/get-involved/campaigns *Tap Project* www.fastcocreate.com/1679876/your-glass-of-restaurant-tap-water-goes-to-work-unicef-and-droga5-kick-off-tap-project-2012 *Provokateur Tap Water Campaign* almavasola.wordpress.com/2013/01/28/provokateur-tap-water-campaign/	

The water cycle
Students
• investigate how the operation of the water cycle connects people and places (ACHGK038)
	Inquiry activity
	Students develop geographical questions and plan an inquiry to produce an engaging and informative resource for others about a catchment area. 🎓 👥
	• In the resource students will:
	  - demonstrate how water moves through the catchment area and connects people and places
	  - explain interconnections between people and water in the catchment area – the impact of water on people's lives and human impact on water resources
	  - identify the values placed on water in the catchment area by different groups of people
	  - predict the potential impact of climate change on water, people and places in the catchment ⚙
	  - make a judgement about the sustainability of current water-use practices in the catchment area and propose individual actions to conserve water resources. 🌱 ⚙
	The geographical inquiry:
	• Create a KWL chart to record students' knowledge and develop inquiry questions
	Sample KWL Chart
	
		K What do I know?	**W** What do I want to know?
			These will be inquiry questions
				L What did I learn?

Forms of water Farms get irrigation water from the river and underground	What is a catchment? How do I find my catchment on a map?			Students use a guided scaffold to complete an informative resource. The resource selected should be in keeping with the students' strengths and learning preferences, for example: brochure, infographic, video.

Content	Teaching, learning, assessment and resources	Sample adjustments
The value of water Students • investigate the economic, cultural, spiritual and aesthetic values of water for people, including Aboriginal and Torres Strait Islander Peoples and/or peoples of the Asia region (ACHGK041) 🌿 ⓐ	• Students gain an overview of a catchment by creating a catchment flyover in Google Earth. A tutorial for using Google Earth flyover is: www.youtube.com/watch?v=OpE0K_hIy4A **ST** 🖥 • Students investigate water uses within the catchment and human impacts on the catchment using relevant secondary information sources such as topographic maps, video clips, websites or texts prior to undertaking fieldwork. They evaluate each source for usefulness and reliability. **M GS VR** • During fieldwork students use techniques such as water quality testing, water bug surveys, observation and surveying people collect primary data. **F** • Students investigate the economic, cultural, spiritual and aesthetic values of water to people and explain environmental values including examples from the catchment studied, a body of water in NSW with significance to Aboriginal and/or Torres Strait Islander peoples and a catchment in Asia, for example the Ganges River. Students consider why values may vary and what happens when values conflict. 🌿 ⓐ ⚖ 🌐 • Students represent and communicate the findings and results of their inquiry by creating and developing their information resource. ☞ • Students reflect on the inquiry activity and what was learned to complete the KWL chart.	**Extension** Students study a recent example of conflicting values and water use eg economic and environmental flows.

Life Skills content
 	
Water availability
Students
 	
• investigate sources of water in the world
 	
Water as a valuable resource
Students
 	
• explore the cultural value of water to different cultures across the world
• explore the spiritual value of water
	Life Skills
	• Students participate in a geographical inquiry to produce an informative resource, such as a poster, brochure, infographic or presentation, on a selected catchment area. Through the geographical inquiry students will: **F VR**
	  – recognise how water connects people and places
	  – explore the impact of water on people's lives and human impact on water resources
	  – investigate strategies to conserve water resources. 🌿
	The following website provides an overview of catchment areas in NSW:
	www.water.nsw.gov.au/water-management/catchments
	• Students collaborate to develop a print or online mindmap of questions they would like to explore in relation to water in the catchment area, for example, Where is the water located? Where does it come from? How is it used? Who has access to the water? Who does not have access? How are people affecting the catchment? How can the water be conserved? ⚙
	• Students view a flyover of the catchment using Google Earth and locate the area on a map. **M ST**	

Content	Teaching, learning, assessment and resources	Sample adjustments

Life Skills content (continued)	• Using relevant sources, such as video clips, websites or texts, and with support as required, students complete a matrix to identify:
	  – where the catchment is located **M**
	  – who uses the water in the catchment
	  – what the water is used for
	  – why water in the catchment needs to be conserved
	  – how water in the catchment can be conserved
	• Students participate in fieldwork, with support as required, to engage with one or more techniques such as observation, surveying people and water-quality testing to collect primary data. **F**
	• Students use the information gathered to compose their informative resource.
	• Students explore the cultural value of water to Aboriginal and/or Torres Strait Islander peoples. They read the Dreaming story *The Rainbow Serpent* and identify what the story tells us about the relationship between Aboriginal people and water. They explore the significance of a specific body of water to Aboriginal people, such as the Murray River (www.murrayriver.com.au/about-the-murray/murray-river-aboriginals/). Students compare this with the cultural significance of another body of water in Asia, such as the Ganges River.	

Australia's water resources Students • investigate the quantity and variability of water resources in Australia and other places (ACHGK039)	• Students analyse maps and statistics to describe spatial variations in freshwater water resources in Australia such as annual rainfall, river systems, groundwater basins. **M GS** • Students use a stimulus such as '*Hydrologic Reference Stations*' www.bom.gov.au/water/hrs/ to examine yearly river flow, long-term trends and years of above and below average for selected rivers in Australia. **M GS** • Students interpret climate graphs, synoptic charts such as those found at www.climatemps.com and Aboriginal seasonal calendars, for example www.larrakia.csiro.au to describe and explain seasonal variations in Australia's precipitation. **GS VR** • Students investigate and explain other factors that influence Australia's precipitation and water flows eg latitude, altitude, topography, location, climate change. • Students discuss as a class the impact of variable and scarce water resources on human activities and wellbeing in Australia.	Students use a map of Australia's yearly rainfall to describe variations in water across Australia. They compare two climate graphs to describe variations in precipitation throughout the year. Students explain how landforms and locations near the sea affect the amount of rainfall places receive.

Content	Teaching, learning, assessment and resources	Sample adjustments

Water scarcity and water management
 	
Students
• investigate the nature of water scarcity and ways of overcoming it (ACHGK040)
	Group inquiry (Assessment)
	• Students work in small groups to rotate through six learning stations using teacher-provided resources to collaboratively complete activities and investigations into water scarcity. ♚
	    Station 1: The nature and extent of global water scarcity – Water scarcity and water stress, spatial distribution of water scarcity.
	    Station 2: Africa and Asia – The extent of water scarcity in selected African and/or Asian countries.
	    Station 3: Impacts – Social, economic and environmental impacts of water scarcity. Why is water scarcity an issue? Students may view a stimulus video as an example of the impact of water scarcity *'Walking in Sabina's shoes'* www.youtube.com/watch?v=-bEtqZoD4V4. **VR**
	    Station 4: Causes – Factors contributing to water scarcity – overuse, misuse, natural hazards, population, urbanisation, poverty. ✸
	    Station 5: Strategies – Strategies used to overcome water scarcity in different parts of the world, for example recycling, reuse, desalination, inter-regional transfer, wells, irrigation methods. The role of governments, non-government organisations, individuals and communities in achieving sustainable water management. ✸
	    Station 6: Challenges – Examine a contemporary issue linked to water scarcity and sustainability, for example dams, political conflict or manufacturing of bottled water. ⚘
	
	• At the completion of the group investigations, students individually prepare a short speech for the United Nations (UN) making a plea for action to overcome global water scarcity and unsustainable water use. An example of an inspiring speech is Severn Suzuki's speech to the UN in 1992 www.youtube.com/watch?v=oJJGuIZVfLM. **VR** ⚘ ✤ ⚑ ◕
	
	• Using an agreed-upon criteria and the process of a peer review, the class chooses one student's speech to be recorded and published, for example on the school website or school social media platform such as YouTube. ✤
	
	• Working collaboratively, students contribute appropriate images such as photos, videos, maps to accompany the chosen speech. **VR**
		Students access supports such as scaffolds and guides, as well as peer and teacher support as required to complete the group inquiry.
		
		Students prepare some points to support action to overcome global water scarcity and unsustainable water use.

Content	Teaching, learning, assessment and resources	Sample adjustments
Life Skills content **Water availability** Students • compare the availability of water as a resource in different places **Factors affecting water accessibility** Students • explore how people's activities and actions affect access to fresh water • recognise that access to fresh water is limited	**Life Skills** • Students explore ways people can conserve water in the home by reviewing the list of household water uses constructed previously and considering strategies to conserve water for each use. 👥 • Students view a stimulus on conserving water and add ideas to their list of conservation strategies. Examples of stimulus resources that can be used are: **VR** ⚡ *How to Save Water* (webpage) www.wikihow.com/Save-Water *10 Ways to Conserve Water this World Water Day (2015)* (video) www.youtube.com/watch?v=cV_Vr_xgrn0 *Heroes of Water Saving* (video) www.youtube.com/watch?v=kp_nyVPK4XQ *10 Tips for Saving Water in the Home* (video) www.youtube.com/watch?v=hLcKn1M5fRQ • Students explore differences in the ways water is accessed and used domestically in other countries. A stimulus video such as *'Walking in Sabina's shoes'* www.youtube.com/watch?v=-bEtqZoD4V4 may be used to explore differences and the impact of water scarcity. ⚖️ 🌐 • Students explore the infographic produced by *The Water Project – 10 Ways Clean Water Can Change the World* (thewaterproject.org/why-water/10-ways-clean-water-changes-the-world). They consider the importance of each of the effects of clean water and decide which they think is the most important. Students present their choice to the class or a selected audience and justify their decision. They may create a visual stimulus to support their presentation. **GS VR** ⚙️ • Students listen to classmates' speeches on actions to overcome global water scarcity and participate in the selection of one student's speech to be recorded and published. ⚙️ • Working collaboratively, students contribute appropriate images such as photos, videos, maps to accompany the chosen speech. **VR**	

Content	Teaching, learning, assessment and resources	Sample adjustments

Natural hazard
 	
Students
• investigate one contemporary atmospheric hazard or hydrologic hazard including causes, impacts and responses (ACHGK042)
	• Working collaboratively, students identify atmospheric and hydrological hazards and discuss connections with the water cycle, water availability and human wellbeing. 👭
	• Students undertake a study of a water-related natural hazard and associated disaster, for example droughts, floods, thunderstorms and tropical cyclones. They:
	  – explain the physical causes and spatial patterns of the hazard **M**
	  – predict potential impacts of climate change on hazard occurrence, frequency and extent
	  – examine one hazard event that resulted in a natural disaster
	  – identify and critique responses by individuals, groups and governments ⚖ 🐨
	  – assess management strategies to reduce the future impact of similar hazard events. ⚙
	• Students complete a 'What I Learned' activity such as a mind map or infographic in which they reflect on the concepts, skills and knowledge developed during the unit. **VR**
		Students are provided with print and online resources at their reading level to use when investigating a water-related hazard and associated disaster.

Life Skills content
 	
Factors affecting water accessibility
 	
Students
• explore how natural hazards affect access to fresh water
	Life Skills
	• Students brainstorm examples of natural disasters. They consider how natural disasters may affect water availability. ⚙
	• Students investigate a water-related natural hazard or specific disaster, for example droughts, floods, thunderstorms and tropical cyclones. They complete a matrix or concept map including:
	  – cause of the hazard
	  – impact of the hazard on people
	  – impact of the hazard on people's access to water ⚖
	  – strategies to reduce the impact of a similar hazard event in the future. ⚙
	• Students complete a 'What I Learned' activity such as a mindmap or infographic in which they reflect on the concepts, skills and knowledge developed during the unit. **VR**	

Sample assessment activity

Outcomes assessed: GE4-5, GE4-7, GE4-8

Students collaboratively investigate water scarcity and sustainable water management and then individually prepare a speech to be presented at the United Nations making a plea for action to overcome global water scarcity and unsustainable water use. One speech selected by peer review will be recorded and published on the school website or school social media platform such as YouTube. Working collaboratively, students contribute appropriate images such as photos, video clips, cartoons or maps to accompany the chosen speech.