

Summary	Duration
<p>This unit is written for Stage 3 "Factors that shape places". It is a Geographical Inquiry, enabling students to work through the 3 stages of inquiry; Acquiring, Processing and Communicating Geographical Information. Students use many Geographical Tools, with a particular focus on Fieldwork.</p> <p>The unit is well scaffolded to enable teachers to deliver engaging, quality content with support from Brewongle Environmental Education Centre.</p>	<p>Sample term</p> <p>7 weeks</p> <p>Detail: 7 lessons, 1 fieldwork day</p>

Key inquiry questions

- How does the natural environment influence people and places at Sackville North?
- How have people changed the natural environment at Sackville North and the local Hawkesbury River catchment?
- How do bushfires shape the natural environment and impact where people live in Sackville North?

Outcomes

Geography K-10

- › GE3-1 describes the diverse features and characteristics of places and environments
- › GE3-2 explains interactions and connections between people, places and environments
- › GE3-3 compares and contrasts influences on the management of places and environments
- › GE3-4 acquires, processes and communicates geographical information using geographical tools for inquiry

Geographical concepts	Geographical inquiry skills	Geographical tools
<p>Place: <i>the significance of places and what they are like</i> e.g. characteristics of places.</p> <p>Space: <i>the significance of location and spatial distribution, and ways people organise and manage spaces that we live in</i> e.g.; how people organise and manage spaces in their local environment.</p> <p>Environment: <i>the significance of the environment on human life, and the important interrelationships between humans and the environment</i> e.g. how the environment influences people and places; how people influence the environment; the effect of natural disasters on the</p>	<p>Acquiring geographical information</p> <ul style="list-style-type: none"> ▪ identify an issue or problem ▪ develop geographical questions to investigate the issue or problem ▪ collect primary geographical data ▪ gather geographical information from secondary sources ▪ record information <p>Processing geographical information</p> <ul style="list-style-type: none"> ▪ evaluate data and information for reliability and bias 	<p>Maps -</p> <ul style="list-style-type: none"> ▪ large-scale maps, small-scale maps, topographic maps, flowline maps ▪ maps to identify location, latitude, direction, distance, map references, spatial distributions and patterns <p>Fieldwork -</p> <ul style="list-style-type: none"> ▪ observing, measuring, collecting and recording data, conducting surveys and interviews ▪ fieldwork instruments such as measuring devices, maps,

<p>environment.</p> <p>Interconnection: <i>no object of geographical study can be viewed in isolation e.g. how environments influence where people live; ways people influence the characteristics of their environments.</i></p> <p>Scale: <i>the way that geographical phenomena and problems can be examined at different spatial levels e.g. environmental and human characteristics of places on local and regional scales; the effect of events on people and places locally and regionally.</i></p> <p>Sustainability: <i>the capacity of the environment to continue to support our lives and the lives of other living creatures into the future e.g. extent of environmental change; environmental management practices; sustainability initiatives.</i></p> <p>Change: <i>explaining geographical phenomena by investigating how they have developed over time e.g. changes to environmental and human characteristics of places.</i></p>	<ul style="list-style-type: none"> ▪ represent data and information in appropriate forms ▪ interpret data and information gathered ▪ analyse findings and results ▪ draw conclusions <p>Communicating geographical information</p> <ul style="list-style-type: none"> ▪ reflect on the findings of the investigation; what has been learned; the process and effectiveness of the inquiry 	<p>photographs, compasses, GPS</p> <p>Graphs and statistics -</p> <ul style="list-style-type: none"> ▪ pictographs, data tables, column graphs, line graphs, climate graphs ▪ multiple graphs on a geographical theme ▪ statistics to find patterns <p>Spatial technologies -</p> <ul style="list-style-type: none"> ▪ virtual maps, satellite images, global positioning systems (GPS) <p>Visual representations -</p> <p>photographs, aerial photographs, illustrations, flow diagrams, annotated diagrams, multimedia, web tools.</p>
--	---	---

<p>Unit overview</p>
<p><i>As urban Sydney sprawls in all directions, the Northwest is changing dramatically. This Geographical Inquiry will focus on the connections between people and nature at Brewongle Environmental Education Centre and its surrounds at Sackville North on the Hawkesbury River.</i></p>

Content	Teaching, learning and assessment
<p>Stage 3 - Factors that Shape Places</p> <p>Environments shape places</p> <p>Students:</p> <ul style="list-style-type: none"> ▪ investigate how the natural environment influences people and places, for example: (ACHGK028) – discussion of how climate influences the distribution of where people live  – comparison of how landforms influence where and how people live in Australia and another country  <p>Factors that change environments</p> <p>Students:</p>	<p>Student-centred inquiry into the contemporary land use and local planning issues</p> <p>Students investigate the natural environment around Brewongle Environmental Education Centre, including the local catchment of the Hawkesbury River.</p> <p>Note: This learning and teaching sequence will evolve into a geographical inquiry project which demonstrates different examples of how the natural environment has influenced people and places.</p> <p>ACQUIRING Geographical Information</p> <p>Pre-Visit Lessons</p> <p>Lesson 1:</p> <p>Students use Google Maps to find Brewongle Environmental Education Centre and answer the relevant questions in the Fieldwork booklet to familiarise themselves with the site.</p>

Content	Teaching, learning and assessment
<p>▪ investigate the ways people change the natural environment in Australia and another country, for example: (ACHGK026, ACHGK027)</p> <p>examination of how people, including Aboriginal and Torres Strait Islander Peoples, have influenced each country's environmental characteristics eg land clearing 🙌🌿⚙️</p> <p>Humans shape places</p> <p>Students:</p> <ul style="list-style-type: none"> ▪ investigate how people influence places, for example: (ACHGK029) <ul style="list-style-type: none"> – description of who organises and manages places eg local and state governments 🏠 – identification of ways people influence places and contribute to sustainability eg roads and services, building development applications, local sustainability initiatives FST 🌿🌟 – examination of a local planning issue; the different views about it and a possible action in response to it ⚖️🎓🇺🇸 <p>Bushfire hazard</p> <p>Students:</p> <ul style="list-style-type: none"> ▪ investigate the impact of ONE contemporary bushfire hazard in Australia, for example: (ACHGK030) <ul style="list-style-type: none"> – identification of the location and extent of the disaster MST 📊 – description of the impact of the disaster on natural vegetation and the damage caused to communities VR 🖥️🎓 – examination of how people can prevent and minimise the effects of a bushfire ⚙️👥🗣️ 	<p>Questioning:</p> <ul style="list-style-type: none"> ▪ Clearly articulate the aim or purpose of the geographical investigation. The aim of the investigation is to research the factors that shape places. A particular focus is placed on the connections between people and nature at Sackville North in Northwest Sydney, using Brewongle Environmental Education Centre as a case study site. ▪ Conduct a class brainstorming session to generate geographical questions to investigate and plan the inquiry in order to answer the inquiry question. This should be a student-centered brainstorming session, however teachers may need to assist students with creating the geographical questions. <i>Geographical questions will help students identify the information they need in order to understand possible ways in which the natural environment influence people and places.</i> For example; <ul style="list-style-type: none"> ▪ What are some examples of environmental factors that influence people and places? ▪ Why might people choose to live in a specific suburb or area? ▪ What is the research site? ▪ What landforms exist within the research site? ▪ What are some land uses within the research site? <p>Lesson 2:</p> <p>As a class or in small groups (for example, allocate groups 1-5 with one of the geographical questions created last lesson), students:</p> <ul style="list-style-type: none"> ▪ Decide what sort of information is needed to support the geographical inquiry and where additional information can be sourced, e.g. local council and NSW Planning and Environment. ▪ Identify the geographical tools required to access information such as referencing a variety of maps, undertaking fieldwork, accessing data, and using spatial technologies and visual representations. ▪ Develop a system for recording information collected during the research process. In addition to the raw data to be collected in the Fieldwork booklet, students may create an excel spreadsheet and a Google Drive folder to share data and information easily. <p>Examples of data and information sources Pre Visit:</p> <p>The Stage 3 Geography page of Brewongle EEC's website will provide you with links to support student learning. These include an aerial photo, topographic map, vegetation maps, and information on local Darug and European history.</p> <ul style="list-style-type: none"> ▪ Source a range of maps to describe the location. . ▪ Research information on the traditional Aboriginal people of the area: how they managed the land, the fresh water sources, what they planted, harvested and hunted to meet their needs. ▪ Review photographs of Brewongle in the online support material and label the main geographical features (bush, houses, river, grass/farmland). ▪ Determine the role of government in planning, developing or managing the place provided in support material. <p>Fieldwork Activities</p> <p>Students travel to Brewongle EEC to conduct fieldwork. Fieldwork activities relate directly to the 3 Key Inquiry Questions of the unit and are</p>

Content	Teaching, learning and assessment
	<p>facilitated by Brewongle staff. Students will answer questions and insert data into their Fieldwork Booklets throughout the activities.</p> <p>Fieldwork Activity One: Topographic Mapping & Water Quality</p> <p>Brewongle teachers greet students at the bus bay on Sackville Ferry Road to observe and discuss the development across the road. Students walk through the bush (via Brewongle for toilet stop) and down to the Hawkesbury River (time permitting), discussing runoff and water flow at various locations along the way. Students learn about Topographic maps before participating in a lesson on rainwater runoff and flow. Whilst at the River, students test the water quality and discuss results.</p> <p><i>Group discussion about how the environment influences people and places at Sackville North, with a focus on water and landforms.</i></p> <p>Fieldwork Activity Two: Habitat Assessment at BEEC</p> <p>Students create a 10m quadrat in the bush at BEEC in order to:</p> <ul style="list-style-type: none"> ▪ Survey plant species and age diversity; ▪ Measure air temperature and humidity; ▪ Record aspect using compasses; ▪ Set up motion sensor cameras and leave overnight; ▪ Survey bird species diversity; ▪ Conduct a Sound Map of natural and man-made sounds. <p>Students analyse historical photographs of the site where their quadrat survey is conducted. <i>Group discussion about how people have changed the site, extending to natural environment at Sackville North and the local Hawkesbury River Catchment.</i></p> <p>Fieldwork Activity Three: Vegetation and Bushfires</p> <p>Students compare and contrast two sites at Brewongle, analysing the layering and density of the vegetation and assessing both sites for bushfire risk. Students create a Nature Map using leaves and material from the bush to illustrate layers and density of each site. Students collect a leaf from each site to conduct a burn test in Brewongle's fire pit. Alternatively, student can use Indigenous Fire Sticks and fuel (leaves) gathered from each site to attempt to start a fire.</p> <p><i>Group discussion about bushfire risk and if and how it influences where people live around Sackville North.</i></p> <p>Post Visit Activities</p> <p>Lesson 1:</p> <ul style="list-style-type: none"> ▪ Source appropriate data and other statistical information relating to population growth and the natural environment in Northwest Sydney. Students may also research other local issues in the Hawkesbury area, for example, the Northwest Rail Link and other transport issues, as well

Content	Teaching, learning and assessment
	<p>as river use.</p> <ul style="list-style-type: none"> Develop and conduct a survey of community members to ascertain their perceptions of the impact of population increase on our nature reserves (positive and negative). Include impacts on people, flora and fauna and water quality of the Hawkesbury River. <p>PROCESSING Geographical Information</p> <p>Lesson 2:</p> <p>Below are some examples of geographical tools which students can use to collate and review the data and information collected and evaluate for its usefulness. Teachers or students may choose to use any number of these tools, which will then be included within the Documentary assessment task.</p> <ul style="list-style-type: none"> Using a topographic map or satellite image as a base map, locate the Brewongle and identify surrounding natural environmental features. Students collate data from their in-depth study into a table to summarise their findings. Create flowcharts to demonstrate understandings of the ways the environment influences people and places. Assemble and annotate photographs to provide a visual representation of the site. Analyse and label interconnections. Develop consequences charts to explain human impacts (positive and negative). Show the impacts on Google Tour Builder. Use photos taken on the day to match parts of the tracks we walked. Use a T-chart to represent data on advantages and disadvantages of population increases in Northwest Sydney. Construct a flow chart or concept map to explain the role of government, and other major stakeholders in sustainably developing Northwest Sydney and protecting our nature reserves. Conduct a search for Brewongle EEC on the Rural Fire Service Bushfire Prone Land Tool. Hypothesise about how the results will change with Seasons throughout the year. Discussion: <i>Does the information relate to the inquiry questions used to shape the investigation?</i> <p>Assessment Task: COMMUNICATING Geographical Information</p> <p>Lessons 3/4:</p> <p>Students work in small groups to develop a 5-6 minute documentary to convey their understandings of the possible effects of population increase on our nature reserves. Put forward arguments and opinions.</p> <p>The documentary should include:</p> <ul style="list-style-type: none"> A clear description of the various land uses around Brewongle EEC and an evaluation of some of the consequences for the environment; Tools to support your information, such as maps, satellite images, graphs, statistics, flowcharts, labelled photographs, diagrams, illustrations/sketches and other labelled visual representations; Information on the traditional use of the place by Darug people;

Content	Teaching, learning and assessment
	<ul style="list-style-type: none"> ▪ Information on the types of land use by early European settlers; ▪ A description of the role of government in organising or managing the place as well as the perspectives of other stakeholders, for example developers, conservationists, recreationists and local residents; ▪ An evaluation of the potential impact of bushfire on the local area; ▪ A description and justification of a course of action to decrease the impact of changes to the natural environment around Brewongle EEC.

Assessment overview

Many of the activities require students to demonstrate their learning. These activities, in addition with the students' Fieldwork Booklets, can be used to assess student progress at various stages throughout the inquiry process.

The final task of the unit, the documentary, is designed as an assessment task. Through this, students will demonstrate their understanding of the unit including the Key Inquiry Questions and the Fieldwork. Please see attached Assessment Rubric.