# The Earth's Environment - A Marshy Mystery | Stage 2 | Geography

## Summary

This unit is written for Stage 2 "The Earth's Environment". 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.

The unit is well scaffolded to enable teachers to deliver engaging, quality content with support from Brewongle Environmental Education Centre.

Students will conduct research and field assessments to understand the natural and built environment at Blacktown Showground.

## Duration

Sample term

6 weeks

Detail: Fieldwork Day

## Key inquiry questions

- How does the environment support the lives of people and other living things, for example the Green and Golden Bellfrog?
- How do different views about the environment influence approaches to sustainability?
- How can people use places and environments more sustainably?

## Outcomes

### Geography K-10

› GE2-1 examines features and characteristics of places and environments

› GE2-2 describes the ways people, places and environments interact

› GE2-4 acquires and communicates geographical information using geographical tools for inquiry

## Geographical concepts

**Place**: *the significance of places and what they are like* e.g. characteristics of places.

**Space**: *the significance of location and spatial distribution, and ways people organise and manage spaces that we live in* e.g.; how people organise and manage spaces in their local environment.

**Environment:** *the significance of the environment on human life, and the important interrelationships between humans and the environment* e.g. how the environment influences people and places; how people influence the environment; the effect of natural disasters on the environment.

**Interconnection:** *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.*

**Scale:** *the way that geographical phenomena and problems can be examined at different spatial levels* e.g. environmental and human

## Geographical inquiry skills

**Acquiring geographical information**

- develop geographical questions to investigate
- collect and record relevant geographical data and imformation, for example, by observing, by interviewing, conducting surveys, or using maps, visual representations, the media or the internet.

**Processing geographical information**

- represent data by constructing tables, graphs and maps
- represent information by constructing large-scale maps that conform to cartigraphic conventions, using spatial technologies as appropriate
- interpret geographical data to identify distributions and patterns and draw conclusions

**Communicating geographical information**

- present findings in a range of communication forms, for example, written, oral, digital, graphic, tabular and visual, and use

## Geographical tools

**Maps - M**

- large-scale maps, world map, globe, sketch maps
- maps to identify location, direction, distance, map references spatial distributions and patterns

**Fieldwork - F**

- observing, measuring, collecting and recording data, conducting surveys and interviews
- fieldwork instruments such as measuring devices, maps, photographs

**Graphs and statistics - GS**

- tally charts, pictographs, data tables, column graphs, simple statistics

**Spatial Technologies - ST**

- virtual maps, satellite images, global positioning systems (GPS)

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| characteristics of places on local and regional scales; the effect of events on people and places locally and regionally.<br>**Sustainability**: *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. | geographical terminology<br>▪ reflect on their learning to propose individual action in response to a contemporary geographical challenge and identify the expected effects of the proposal | **Visual representations - VR**<br>▪ photographs, illustrations, diagrams, story books, multimedia, web tools. |

## Unit overview

A geographical investigation and mystery all rolled into one.

Blacktown Council need some research done! A local resident has reported seeing an endangered Green and Golden Bell Frog while walking past the wetland. Students will be assigned as site investigators to see how likely it is that the sighting is accurate.

Students are presented with information regarding the sighting of an Endangered Green and Golden Bell Frog. They must conduct a thorough investigation water, food and shelter, and threats. In doing so, students will develop deep knowledge and understanding about the interconnectedness of all aspects of the environment. They will also develop knowledge and understanding about key environmental concepts and develop the skills to undertake the process of geographical inquiry.

*This Geographical Inquiry will focus on the connections between people and nature at the Blacktown Showground Precinct, focusing on the Green and Golden Bell Frog as a case study.*

| Content | Teaching, learning and assessment |
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| **Stage 2 - The Earth's Environment**<br>**Content**<br>**Significance of environments**<br>Students:<br>▪ investigate the importance of natural vegetation and natural resources to the environment, animals and people, for example: (ACHGK021, ACHGK022, ACHGK024)<br>– identification of types of natural vegetation eg forests, grasslands, deserts VR<br>– explanation of the importance of natural vegetation to animals and the functioning of the environment eg provision of habitats, production of oxygen F<br>– discussion of the importance of natural vegetation and natural resources to people eg provision of food, medicine, fuel, timbers, fibres, metals F<br>**Protection of environments**<br>Students:<br>▪ investigate sustainable practices that protect environments, including those of Aboriginal and Torres Strait Islander Peoples, for example: (ACHGK023, ACHGK024, ACHGK025)<br>– examination of how environments can be used sustainably eg sustainable agricultural, commercial and recreational practices<br>– discussion of ways waste can be managed sustainably VR | **Student-centred inquiry into the contemporary land use, biodiversity and human impacts**<br>Students investigate the natural environment around the Water Sensitive Urban Design wetlands and Blacktown City Showground, investigating the mysterious death of a Green and Golden Bell Frog.<br>Note: This learning and teaching sequence will evolve into a geographical inquiry project which demonstrates different examples of the significance of natural environments and how we can protect them.<br><br>**ACQUIRING Geographical Information**<br>**Blacktown Bell Frog Pre-Visit Questions**<br>https://australianmuseum.net.au/green-and-golden-bell-frog<br>http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10483<br><br>1. Use the information found in the video and in the links provided on our website and write a paragraph describing the Green and Golden Bell Frog.<br>2. What do Bell Frogs eat?<br>3. What type of habitat do they live in?<br>4. What are the main threats to the bell frog?<br>5. Read the Sighting Details found in the Student Worksheet. Make an hypothesis about the likelihood of the sighting being accurate. Provide evidence for (justify) your hypothesis.<br><br>**Excursion - Significance of environments**<br>Students investigate the wetland focusing on potential food, water and habitat for a population of Green and Golden Bell Frogs. They will identify types of habitat, explain it's importance to animals and the functioning of the environment. Students will assess human impacts and discuss the importance of natural vegetation and natural resources to people.<br>*Water*<br>Frogs are quite sensitive to poor water conditions. We know the sighting was in the wetland adjacent to the cafe.<br>▪ Test water quality for temperature, Oxygen, salinity and heavy metals.<br>▪ Test the speed of water flow in the wetland<br>▪ Conduct soil tests on ph, leaf litter depth and soil moisture.<br>▪ Record findings<br>*Food*<br>For Green and Golden Bell Frogs to be present in the wetland, there needs to be food for both the frog stage and the tadpole stage.<br>▪ Dipnet in the ponds to ascertain whether or not there are waterbugs for frogs to eat<br>▪ Visually survey the site for evidence of phytoplankton (algae) which provides food for tadpoles<br>▪ Record findings<br>*Habitat*<br>Green and Golden Bell Frogs need different habitat during differemnt stages of their life cycle.<br>▪ *Habitat Assessment:* Assess breeding, foraging, refuge and connectivity habitat<br>▪ *Sketch Footprints:* Sketch and identify four footprints found in the mud.<br>▪ Record findings |

| Content | Teaching, learning and assessment |
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| | *People*<br>Blacktown Showground is a public space. Do people influence the potential for Green and Golden Bell Frogs to inhabit the area?<br>▪ *Litter survey:* Conduct a litter survey of a selected area at the showground<br>▪ *Head Count:* Count how many people you can see in the area and note the type of activity they are doing<br>▪ *Record findings*<br>*Conclusion*<br>▪ Students discuss their hypothesis and reasons using recorded findings.<br><br>**PROCESSING Geographical Information**<br>**Post-Visit Lessons - Protection of environments**<br>*Students will investigate sustainable practices that protect environments and discuss ways waste can be managed.*<br><br>1. Conduct an audit of the frog habitat around your home or school and identify ways to manage these sustainably.<br>2. Use the data you collected on your excursion as well as your own research to write a list of the ways people can make Blacktown Showground a better habitat for Green and Golden Bell Frogs.<br><br>3. Use information on the link below as well as other sources to research the effects of domestic pets on native wildlife. Conduct a class debate on the topic “People should not be allowed to have domestic pets in Australia”.<br>http://www.environment.gov.au/resource/protecting-our-wildlife-responsible-pet-ownership<br><br>**Assessment Task: COMMUNICATING Geographical Information**<br>4. Create a short viral video (less than 1 minute) to educate the community about the Green and Golden Bell Frog.<br>Start your research with the following links, but remember to put the information in your own words.<br>http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10483<br>http://www.environment.nsw.gov.au/resources/threatenedspecies/08468tsdsgreengoldenbro.pdf |

## 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 viral video, 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.

# Syllabus images and equations

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