



Stage 6 - Earth & Environmental Science

Earth's Resources

Catherine Hill Bay, Swansea, Mulbring

Program Overview

Students will be taken on a journey through time through an investigation of geology and fossils at three significant geological locations close to the Central Coast. Students will be able to see significant coal seams and dykes, the remain of a Glossopteris Forest and a variety of fossils at a disused quarry.

Key Questions

1. What are the components of rocks and soil?
2. How are rocks formed?
3. What is the geological history of our area?

Learning Experiences & Content

Working Scientifically

Students will conduct an investigation to collect, process and analyse data in order to identify trends, patterns and relationships in the Earth's resources.

Field work activities include:

- soil texture, colour and ph tests
- diagrams of rocks and rock layers
- classification and measurement of fossils.

Catherine Hill Bay

Students will view the Great Northern Coal Seam between the Teralba Conglomerate and Bolten Point Conglomerate. An example of a Dolerite Dyke can also be viewed on the rock platform. They will construct quadrat diagrams of rock and grain size in the conglomerate and draw stratigraphic representations of rock layers.

Swansea Heads

The rock platform at this site consists of Tuff and overlays a coal seam. Students will view 'Glossopteris' fossil tree stumps believed to have been felled by a volcanic eruption. The orientation of the stumps will be recorded using a compass to determine the direction of the explosion.



Mulbring Quarry

This disused quarry site at Mulbring part of the Branxton formation and includes layers of clays and shales.

The fossils are easily found and include examples of Bryzoa, Mollusc, Brachiopods and Crinoids.





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Outcomes

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- ✿ **EES11/12-3** conducts investigations to collect valid and reliable primary and secondary data and information.
- ✿ **EES11/12-4** selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media.
- ✿ **EES11/12-5** analyses and evaluates primary and secondary data and information.
- ✿ **EES11-8** describes the key features of the Earth's systems, including the geosphere, atmosphere, hydrosphere and biosphere and how they are interrelated.

Science Content

Rocks, Minerals and the Rock Cycle

Students:

- investigate methods of classifying rocks and minerals used by Aboriginal and Torres Strait Islander Peoples.
- investigate the chemical composition of a variety of minerals and explain their formation.
- investigate the physical properties of minerals that are used to assist in classification.
- investigate a range of rocks and minerals and classify samples using dichotomous keys.
- explain the formation of rocks as characteristic assemblages of mineral crystals or grains that are formed through igneous, sedimentary and metamorphic processes, as part of the Rock Cycle (**ACSES019**).
- explain the formation of soil in terms of the interaction of atmospheric, geologic, hydrologic and biotic processes (**ACSES020**).
- conduct a practical investigation to examine soil types and component materials (**ACSES020**).

