



This document summarises the resources available to support Stage 6 Earth and Environmental Science in NSW. The summary is organised by module and inquiry question. It will be updated each month as new resources become available.

Field activities for Years 11 and 12 along the [Newcastle Coastal Geotrail](#) may be completed in person or used to supplement class concepts through the online app.

A summary of the NSW course is found in our [EES Overview](#) video.

## M1: Earth's Resources

### Structure of the Earth, the Early Geosphere, Atmosphere and Hydrosphere

Videos: [Solar System Formation](#), [Density Layers](#)

Blog: [Geologic Time and Earth's Age](#), [Origin of the Solar System](#), [Meteorites and the history of Earth](#), [Gravity Settling](#), [Zircons are Forever](#)

Web:

- [Origin of the Solar System Reading](#)
- [Spheres of Earth Reading](#)
- Meteorites and Earth Layers [Teacher Notes](#) and [Student Worksheet](#)
- Earthquake waves and Earth structure – [student worksheet](#)
- Using zircon to determine Earth's age – [student worksheet](#)
- Density layers [student activity](#)

### Rocks, Minerals, and the Rock Cycle

Videos: [Modelling Metamorphism](#), [Scrumptious Soil](#), [Soil Components](#), [Crystal Growth Rate](#), [Magma Mingling](#), [Rounding Rocks](#), [Soil Texture Testing](#), [Partial Melting](#)

Blog: [Reading Rocks: Metamorphism](#), [Soil Components](#), [Crystal Growth Rate Investigation](#), [Reading Rocks: Magma Mingling](#), [Reading Rocks: Rounded Rocks](#), [Gravity Settling](#), [Melting Minerals and the Origin of Magma](#)

Web:

- [Sedimentary Rocks and Structures Reading](#)
- [Grain Size Indicator](#)
- Igneous Rocks [PowerPoint](#), [Notes](#) and [Student Worksheet](#)
- Metamorphic Rocks [PowerPoint](#), [Notes](#) and [Student Worksheet](#)
- [Metamorphic Rock Activities](#)
- [Scrumptious Soil Student Activity](#)
- [Silicate Minerals Student Activity](#)
- [Soil Reading](#)
- [Streamflow and Sediment Size Student Worksheet](#)

### Geological Timescale

Videos: [Radioactive Popcorn](#), [Geologic Time](#)

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Blog: [Radioactive Popcorn](#), [Geologic Time and Earth's Age](#)

Web:

- [Mapping Events in Geological Time Student Activity](#)
- [Determining Rock Age with Relative and Absolute Dating – Student Worksheet](#)

## Geological Resources

Videos: [Exploration Drilling](#), [Mining Exploration](#), [Layer Cake Core Drilling](#)

Blog: [Hydrocarbon exploration](#), [Datasets and GIS](#), [Mining Exploration](#), [Exploration drilling and rehabilitation](#)

Web:

- Geological Resources [PowerPoint](#), [Notes](#) and [Student Worksheet](#)
- Mining Exploration Box [Construction and Use](#), [Student Activity](#)
- [Using MinView for NSW Geological Exploration Student Activity](#)
- Elements of a High-tech Society [Teacher Notes](#) and [Student Worksheet](#)
- [Oil and gas exploration](#) box
- [Resource Extraction Student Worksheet](#)

## **M2: Plate Tectonics**

### Evidence for the Theory of Plate Tectonics

Videos: [What Lies Below?](#), [Continental Drift](#)

Blog: [Mapping the Seafloor](#), [Rethinking the World](#), [Tectonic Updates](#)

Web:

### Plate Boundaries

Videos: [Plate Boundary Model](#)

Blog: [Reading Rocks: What type of plate boundary?](#)

Web:

- Modelling Convergent and Divergent Boundaries [Teacher Notes](#) and [Student Worksheet](#)
- Savoury Snack Tectonics [PowerPoint](#), [Notes](#) and [Student Worksheet](#)

### Plate Boundaries and Tectonic Structures

Videos: [Divergence](#), [Continental Convergence](#), [Oceanic Convergence](#), [Ocean-Continent Convergence](#)

Blog:

Web:

- [Plate Interactions, Features and Geohazards PowerPoint](#)

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## M3: Energy Transformations

### Role of Energy in Earth's Processes

Videos: [Convection](#)

Blog: [Convection](#)

Web:

- [Convection Currents Student Activities](#)
- [Solar Radiation Driving Earth's Processes Student Worksheet](#)

### Geological Transformations: Earthquakes, Volcanoes and Mountain Ranges

Videos: [Elastic Earthquakes](#), [Magma Mingling](#), [Hot Spot](#), [Partial Melting](#), [Making Magma](#), [Earthquake Pavlova Model](#)

Blog: [Elastic Earthquakes](#), [Blow or Flow](#), [Reading Rocks: Magma Mingling](#), [Making Magma](#)

Web:

- [Earthquakes PowerPoint](#)
- [Volcanoes PowerPoint](#)
- [Volcanoes: Magma Types and Eruptions PowerPoint](#)
- [Partial Melting and Magma Student Worksheet](#)
- [Volcanoes and Magma Infographic](#)

### Transformations in the Oceans, Biosphere and Cryosphere

Videos: [Wonderful Water 1](#), [Wonderful Water 2](#), [Thermohaline Circulation](#), [El Niño and La Niña](#)

Blog: [Global Conveyor Belt](#), [Breaking Bonds](#), [Wonderful water](#)

Web:

- [Ocean Currents Student Activities](#)

## M4: Human Impacts

### Water Management

Videos: [Water Treatment](#); [Stormwater Treatment](#); [Representing Earth's Water](#), [Groundwater Contamination](#); [Nitrogen Cycle II: Fertilised Algae](#)

Blog: [Stormwater Treatment](#); [Distribution of Earth's Water](#), [Groundwater](#), [Nitrogen Cycle II: Fertilised Algae](#)

Web:

- [Desalination and Reverse Osmosis Reading](#)
- [Groundwater Spider Student Activity](#)
- [Stormwater Treatment Data Analysis Activity](#)

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## Salinity and Erosion

Videos: [Preventing Erosion](#)

Blog: [Preventing Erosion](#)

Web:

- [Erosion Control Experiment](#)
- Soil Contamination [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)
- Salinity Causes and Rehabilitation [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

## Effects of Introduced Species

Videos: [Field Study of Introduced Species](#)

Blog: [Introduced Species in Australia](#)

Web:

- Impact of Introduced Species [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

## **M5: Earth's Processes**

### Development of the Biosphere

Videos:

Blog: [Evidence for the Origin of Life](#)

Web:

- [Origin of Life – Black Smokers Reading](#)
- [Origin of Life – Miller-Urey Reading](#)
- [Origin of Life – Panspermia Reading](#)
- Evidence for Photosynthesis [Teacher Notes](#), [PowerPoint](#), [Presentation Notes](#) and [Student Worksheet](#)
- Transition to Land [PowerPoint](#), [Presentation Notes](#) and [Student Worksheet](#)
- Evidence for multicellular life and ecosystem changes [PowerPoint](#), [Presentation Notes](#) and [Student Worksheet](#)

### Changes in the Geosphere, Atmosphere and Hydrosphere

Videos:

Blog: [BIFs and Photosynthesis](#)

Web:

- Effect of Cyanobacteria [Teacher Notes](#), [PowerPoint](#), [Presentation Notes](#) and [Student Worksheet](#)
- Banded Iron Formations [Teacher Notes](#), [PowerPoint](#), [Presentation Notes](#) and [Student Worksheet](#)

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## Plate Tectonic Supercycle

Videos: [Modelling the Plate Tectonic Supercycle](#)

Blog: [The Plate Tectonic Supercycle](#)

Web:

- [Supercontinents and Climate Reading](#)
- [Supercontinents and Evolution Reading](#)
- [Plate Tectonic Supercycle Model – Student Activity](#)

## Fossil Formation and Stratigraphy

Videos: [Geologic Time](#), [Fossil Formation](#)

Blog: [Reading Rocks: What do fossils tell us?](#), [Fossil Formation](#)

Web:

- [Fossilisation – Moulds and Casts Student Activity](#)
- [Fossilisation – Trace Fossil Student Activity](#)
- [Mapping Events in Geologic Time Activity](#)
- [Stratigraphy and Geological Events Student Worksheet](#)

## **M6: Hazards**

### Geological Natural Disasters

Videos: [Liquefaction](#), [Lahar in a Jar](#), [Steepness of a Volcano](#), [Explosivity versus Gas Content](#), [Tsunami Generation](#), [Hot Spot](#), [Earthquake Hazards: Ground Motion](#), [Earthquake Hazards: Surface Rupture and Landslides](#)

Blog: [Liquefaction](#), [Look out for lahars!](#), [Earthquake Hazards](#)

Web:

- [Earthquakes and Tsunamis Reading](#)
- [Plate Interactions, Features and Geohazards PowerPoint](#)
- [Types of Volcanoes Reading](#)
- [Volcanic Gas and Viscosity Student Activity](#)
- [Volcanoes and Viscosity Student Activity](#)
- [Earthquake Depth Student Worksheet](#)
- [Volcanoes and Magma Infographic](#)

### Impact of Natural Disasters on the Biosphere

Videos: [Science of the 2022 Tonga Eruption](#)

Blog: [Weather Disasters](#), Human Impact on Natural Disasters: [Drought](#), [Fire](#), [Flood](#), and [Landslide](#)

Web:

- [East Coast Lows Case Study](#)
- 2019-20 Bushfires [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)
- [2019-20 Bushfires reading](#)

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- Impact of Explosive and Effusive Volcanic Eruptions – [Student worksheet](#)
- Volcanoes and Climate [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

## Prediction and Prevention of Natural Disasters

Videos: [Seismic Detection](#), [Making a tiltmeter](#)

Blog: [Volcanic Predictions](#), [FAQs – Technologies to predict natural hazards](#), [Seismic detection](#), [Tilting technology](#)

Web:

- Minimising the Effect of Geohazards [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

## **M7: Climate Science**

### Natural Processes of Variations in Climate

Videos: [Greenhouse Effect I: The Basics](#)

Blog: [Life in the Greenhouse \(I\): The Basics](#), [Milankovitch Cycles](#)

Web:

- [Climate Change Resources](#)
- Ocean Currents and Climate [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)
- [Supercontinents and Climate Reading](#)
- It's a Trap! Large Igneous Provinces and Climate [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

### Evidence for Climate Variation

Videos: [Oxygen Isotopes and Temperature](#)

Blog: [Oxygen Isotopes and Temperature](#), [Reading Rocks: Climate Evidence](#)

Web:

- [Aboriginal Art as Evidence of Changing Climate](#)
- [Stable Isotopes Reading](#)
- [Fossils as Climate Evidence Reading](#)
- [Climate Since European Settlement Worksheet](#)
- [Evidence for Past Climate Data Processing Activity](#)

### Influence of Human Activities on Changes to Climate

Videos: [Ocean Acidification](#), [Coastal Erosion](#), [Greenhouse Effect II: Enhanced Greenhouse Effect](#)

Blog: [Carbon dioxide and pH](#), [Ocean Acidification](#), [Climate Change: Australia's Coasts at Risk](#), [Weather Disasters: Counting the Cost of Climate Change](#)

Web:

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- [Ocean Acidification](#) Student Activity
- [Changing Species Ranges Reading](#)

## Mitigation and Adaptation Strategies

Videos: [Climate Change: Mitigation and Adaptation](#), [Climate Change: Take Action](#);  
[Greenhouse Effect III: Albedo](#)

Blog: [Carbon Injection](#), [Colour it Cool](#), [Salinity V Solubility](#), [Harnessing Energy from the Sun](#),  
[Climate Change: Mitigation and Adaptation](#), [Climate Change: Take Action](#), [Minerals and  
Technology](#), [Life in the Greenhouse \(III\): Albedo](#), [Australian Agriculture: Future of  
Farming](#), [Net Zero](#)

Web:

- Geoengineering [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)
- Student [worksheets 1](#) and [2](#) about high-tech metals needed for new technologies plus [teacher answers](#)
- [Implementing Alternative Energy - Student Worksheet](#)
- Hydrogen Economy [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

## **M8: Resource Management**

### Using Australia's Natural Resources

Videos: [Mine Site Rehabilitation](#)

Blog: [Mine Site Rehabilitation](#), [Aboriginal Heritage: Scar Trees](#), [Groundwater](#),  
[Exploration drilling and rehabilitation](#), [Australian Agriculture: Overview](#)

Web:

- [Gold Resource Case Study](#)
- [Water Resource Case Study Student Worksheet](#)
- Mining Impact and Rehabilitation [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)
- [Mine Rehabilitation Student Worksheet](#)
- [Mining Waste Management](#) case study
- Student [worksheets 1](#) and [2](#) about high-tech metal resources for new technologies plus [teacher answers](#)
- Renewable Energy in NSW [Presentation](#), [Presentation Notes](#) and [Student Worksheet](#)

### Waste Management

Videos: [Waste Audit](#)

Blog: [Waste in Australia](#)

Web:

- [Mining Waste Management](#) case study

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- Solid Waste Management [Presentation](#), [Presentation notes](#) and [Student Worksheet](#)
- [Aluminium recycling sustainability worksheet](#)
- Waste Audit – [student activity](#)

## Sustainability

Videos:

Blog: [Aboriginal Resource Management in NSW](#)

Web:

- [Mining Waste Management](#) case study
- [Organisational Sustainability](#) student worksheet
- [Sustainability: Tree Planting](#) student worksheet
- Mining and Sustainability [Presentation](#), [Presentation notes](#) and [Student Worksheet](#)

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