

Human Impacts – Water Management and Introduced Species at Penrith Lakes (Full Day Program) | Stage 6 | Earth and Environmental Science

Students work scientifically and achieve fieldwork outcomes

Note: This excursion can also be used as a model for a **DEPTH STUDY (5 hours)**

Summary	Duration
<p>This excursion addresses outcomes from the NESA Stage 6 Earth and Environmental Syllabus.</p> <p><i>Focus – Human Impacts – Water management and Introduced Species</i></p> <p>This unique and highly engaging program allows students to perform a first-hand investigation of the movement of stormwater from the urban and industrial catchment to recreational water use at Penrith Lakes. Students perform primary data testing that gives an insight into the success of water management practices at Penrith Lakes. Secondary data on the flow of water throughout the catchment is also described, with adequate opportunity for further research. Ways in which human activity can indirectly influence the availability and quality of water are also highlighted. Students will also conduct an aquatic macro invertebrate / vertebrate survey to ascertain the presence and impact of an introduced species, <i>Gambusia</i>, which has contributed to the decline / extinction of an Australian native species, the <i>Green and Golden Bell Frog</i>.</p> <p>Students are guaranteed to be involved in a number of engaging and hands on experiences during the course of the day. Through these, students will further develop their knowledge and understanding, fieldwork and group work skills.</p> <p>Note: This excursion can also be used as a model for a DEPTH STUDY.</p>	<p>Approximately 4 hour on-site excursion to Penrith Lakes Environmental Education Centre.</p> <p><i>Arrival time - 10:00am</i> <i>Departure time – 2:00pm</i></p> <p>Arrival and departure times are guides only. Distance and bus schedules may require modifications to the timetable.</p>

About Penrith Lakes	Learning across the curriculum
<p>Penrith Lakes Environmental Education Centre is located on Old Castlereagh road inside the Sydney International Regatta Centre. This great location allows us to provide studies of land and water management at Penrith Lakes along with local heritage sites and the environmental issues associated with the Nepean River and Blue Mountains.</p>	<p><i>Cross-curriculum priorities enable students to develop understanding about and address the contemporary issues they face.</i></p> <p>Sustainability is concerned with the ongoing capacity of the Earth to maintain all life. It provides authentic contexts for exploring, investigating and understanding systems in the natural and made environments. Relationships, cycles and cause and effect are explored, and students develop observation and analytical skills to examine these relationships in the world around them to design solutions to identified sustainability problems.</p>

Key Inquiry questions

- How can water be managed for use by humans and ecosystems?
- How do introduced species affect the Australian environment and ecosystems?

Outcomes for students

A student:

- develops and evaluates questions and hypotheses for scientific investigation EES11/12-1
- designs and evaluates investigations in order to obtain primary and secondary data and information EES11/12-2
- conducts investigations to collect valid and reliable primary and secondary data and information EES11/12-3
- describes human impact on the Earth in relation to hydrological processes, geological processes and biological changes EES11-11

Teaching and learning activities

- Activity 1: Introduction to Penrith Lakes and abiotic instrument instruction.
- Activity 2: Water Testing
- Activity 3: Dipnetting
- Activity 4: Bird Observation
- Activity 5: Water management practices at Penrith Lakes.
- Activity 6: Wrap Up
 - Evaluation of water management practices.
 - Observation and identification of invertebrate and vertebrate macro species.
 - Features and impact of an introduced species.

Resources

- Provided by PLEEC:
- Freshwater ecosystem with invertebrates
 - Water testing equipment
 - Dip nets
- Provided by visiting school:
- Clipboards
 - Student hats
 - Sunscreen
 - First aid kit and student medications