## Cause and Effect – Inferences and Generalisations (Full Day Program) | Stage 6 | Investigating Science

Students work scientifically and achieve fieldwork outcomes.
This excursion can also be used as a model for a ***DEPTH STUDY (5 hours)***.
Note: This excursion can be combined with Biology.

| Summary | Duration |
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| This excursion addresses outcomes from the NESA Stage 6 Investigating Science<br>*Focus* – Observations and Inferences – Collaborative practical investigation into water quality of a pond/lake.<br>This unique and highly engaging program allows students to conduct a practical investigation and collect a range of qualitative and quantitative data on water quality from a pond/lake. Students collect abiotic and biotic data. Students measure populations of organisms using sampling techniques. Students then analyse the data collected and observe the abiotic-biotic relationships that exist and their interdependence. Students then make inferences and conclusions based on their collaborative practical investigation.<br>There is also a look at past and future ecosystems at Penrith Lakes.<br>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. | Approximately 4 hour on-site excursion to Penrith Lakes Environmental Education Centre.<br><br>*Arrival time* - 10:00am<br>Departure time – 2:00pm<br><br>Arrival and departure times are guides only. Distance and bus schedules may require modifications to the timetable. |

| About Penrith Lakes | Learning across the curriculum |
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| 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, Yarramundi Lagoon and the Blue Mountains. | *Cross-curriculum priorities enable students to develop understanding about and address the contemporary issues they face.*<br>**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. |

| Key Inquiry question |
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| • What inferences can be drawn from observations |

| Outcomes for students |
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| Students:<br>• conduct a collaborative practical investigation<br>• collect a range of qualitative and quantitative primary water quality data of a pond/lake<br>• make inferences and conclusions derived from the primary data collected in this collaborative practical investigation |

| Teaching and learning activities | Resources |
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| • Activity 1: Introduction to Penrith Lakes and abiotic instrument instruction.<br>• Activity 2: Water Testing<br>• Activity 3: Dipnetting, Invertebrate ID, population measurement and interpretation of results.<br>• Activity 4: Bird Observation. Measuring abundance and distribution. Assessment of data.<br>• Activity 5: Wrap Up<br>- Relationships between abiotic and biotic factors. How healthy is the ecosystem?<br>Inferences and Conclusions | Provided by PLEEC:<br>▪ Freshwater ecosystem with invertebrates<br>▪ Water testing equipment<br>▪ Dip nets<br>▪ Magnifiers<br>▪ Binoculars<br>Provided by visiting school:<br>▪ Clipboards<br>▪ Student hats<br>▪ Sunscreen<br>▪ First aid kit and student medications |