PENRITH LAKES
ENVIRONMENTAL EDUCATION CENTRE
EDUCATION FOR A SUSTAINABLE FUTURE

Stage 3 Science
At the Lakes

Outcomes:

1. **ST3-1VA** shows interest in and enthusiasm for science and technology, responding to their curiosity, questions and perceived needs, wants and opportunities
2. **ST3-2VA** demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures
3. **ST3-4WS** investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations
4. **ST3-10LW** describes how structural features and other adaptations of living things help them to survive in their environment
5. **ST3-11LW** describes some physical conditions of the environment and how these affect the growth and survival of living things

A Field Study: "How healthy is the aquatic ecosystem at Penrith Lakes?"

Student Name: _____

Water Testing

Is the water clean?

Date:	**Time:**	**Site:**	**Weather Conditions:**

Test	**Result**	**Water Rating**
Temperature	°C	**Good**: summer 20-30; autumn/spring 15-25; winter 10-20 **Poor:** summer >30; autumn and spring <15 or >25; winter >20
Turbidity	NTU	**Excellent:** <10 **Good:** 10-20 **Fair**: 21-30 **Poor**: >30
pH		**Excellent:** 6.5 - 8.5 **Good**: 5.0 - 6.4 OR 8.6 - 9.0 **Poor:** < 5 (acidic) OR > 9 (alkaline)
Conductivity	ppm	**Excellent**: < 500 **Good:** 500 - 1,000 **Fair:** 1,000 - 1,500 **Poor:** >1,500
Phosphate	ppm	**Excellent:** < 1 **Good:** 1 - 2 **Fair:** 3 **Poor:** 4

What is the water testing rating for water quality?

Excellent	
Good	
Fair	
Poor	

Bird Observations

What aquatic birds can you find? Circle the score.

Bird	Picture	Score	Bird	Picture	Score
Australian Grebe		5	Swan		5
Darter		5	Black Cormorant		3
Egret (white)		5	Pied Cormorant (white chest)		3
Heron (grey)		5	Dusky Moorhen (red beak)		3
Pelican		5	Eurasian Coot (white beak)		3
Royal Spoonbill		5	Purple Swamphen		3
Black Winged Stilt		5	Duck		2
Other: _____		5	Other: _____		5

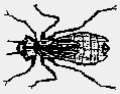
Total Score: _____

What is the aquatic bird rating for water quality?

Number of Birds	Water Quality Rating
5 - 10	Poor
11 - 16	Fair
17 - 24	Good
25 or more	Excellent

Dipnetting

What aquatic invertebrates can you find? Write the score.

Invertebrate	Picture	Score	Invertebrate	Picture	Score
Mayfly Nymph			Waterboatman		
Caddisfly Larvae			Backswimmer		
Dragonfly Nymph			Water Scorpion		
Damselfly Nymph			Water Beetle		
Freshwater Shrimp			Leech		
Water Mite			Pond Snail		
Water Spider			Bloodworm		
Water Treader			Mosquito Fish		
Giant Water Bug			Other: _____		

Total Score: _____

What is the aquatic invertebrate rating for water quality?

Summer/Spring	Winter/Autumn	Water Quality Rating
20 or less	15 or less	Poor
21 - 35	16 - 24	Fair
36 - 40	25 - 34	Good
41 or more	35 or more	Excellent

Making Sense of the Data

Once you have recorded you results from water testing, bird observations and dipnetting, answer the following questions:

1. Is the aquatic ecosystem at Penrith Lakes …

   ☐ Healthy? OR ☐ Unhealthy?

2. Why do you believe the aquatic ecosystem is healthy or unhealthy at Penrith Lakes?

   _____

   _____

   _____

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A further question to think about:

1. What jobs are related to the Penrith Lakes area?

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