

# Expanding our science knowledge by conducting water testing of a local waterway.

## TESTING STREAM HEALTH AND RESILIENCE BY MEASURING WATER QUALITY INDICATORS.

### ESSENTIAL QUESTION

**I am the river and the river is me.**

#### WHAT ARE WE LEARNING?

- Explaining how living things respond to environmental changes both natural and human induced.
- Finding evidence and carrying out appropriate investigations to develop simple explanations.
- Understanding the basic components and methods involved in water quality testing.

#### TRY THIS WITH

- Year Level 7 - 11
- Students who feel a connection with the environment.
- Students who enjoy applied science.

## FIND

Relate  
Infer  
Rephrase

Outline  
Estimate  
Classify

Collect playground rubbish in a large glass jar and add water.

Watch [A Guide to the Earth's Energy](#).

Reflect on competing demands of agriculture and food production with the environment.

Read [Some things in the water](#) and [Rivers of Gold](#).

Understand the role that nutrients, sediment and oxygen play in [river system pollution](#).

Understand the [Nitrogen and Phosphate cycle](#).

Watch [The Haber Process](#) and discuss.

Create a [TEDEd Classroom Sequence](#) for each video.

Share videos between groups in the class.

Assign one of the things that the class will test the stream for [ammonia](#), nitrogen, dissolved oxygen.

Understand why we are testing for each element.

Use [Popplet](#) to create cause and effect diagrams - include a normal or expected range.



## APPLY

Isolate  
Investigate  
Discover

Highlight  
Prioritise  
Question

Conduct a staff site visit and evaluate hazards.

Account for activity induced hazards such as flow testing as well as physical environment.

Research the site so some of the social factors can be addressed.

Introduce the site we are visiting and the things to be measured.

Locate the testing site on a map using [Google Maps](#) and [Google Satellite View](#).

Analyse the waterway by identifying surrounding land use and possible pollution sources.

Identify sites of historic or cultural significance. Understand what projects are already underway to address river health.

Practice how to conduct the tests on this water before site visit.

Use Evernote to record findings -aim

to record photographic and video information.



## PRODUCE

Construct  
Create  
Discover

Discuss  
Prove  
Infer

Conduct your water quality survey - test the stream in at least two locations.

Measure nitrates/nitrites using the test strip and compare results with the chart provided.

Measure Ammonia using the test strip and compare results with the chart provided.

Measure pH using the test strip and compare results with the chart provided.

Measure Flow by dropping a tennis ball in the stream.

Record the time taken for the ball to travel 10 metres at differing points.

Use your findings from each testing site at your stream to create a picture of stream health.

Remind students to remove any rubbish they see during the day from the site.

Send your [stream health report](#) to your local [Regional Council](#).

## SUCCESS CRITERIA

Students can check they have completed the task successfully by:

- Creating a cause and effect diagram that outlines the effect of one pollutant.
- Analysing the site previsit and identifying land use and sources of pollutants.
- Conducting a water quality test at the stream site based on a range of variables.

PRINCIPLES	VALUES	KEY COMPETENCIES	LEARNING AREAS	WORD BANK	KEY CONCEPTS
Future Focus Learning to Learn	Ecological Sustainability Community and Participation	Participating and Contributing Using language, symbols and texts Thinking	Science Social Science	Nitrogen Ammonia Oxygen	Nitrogen Cycle Flow Rate Fair Testing Water Quality