

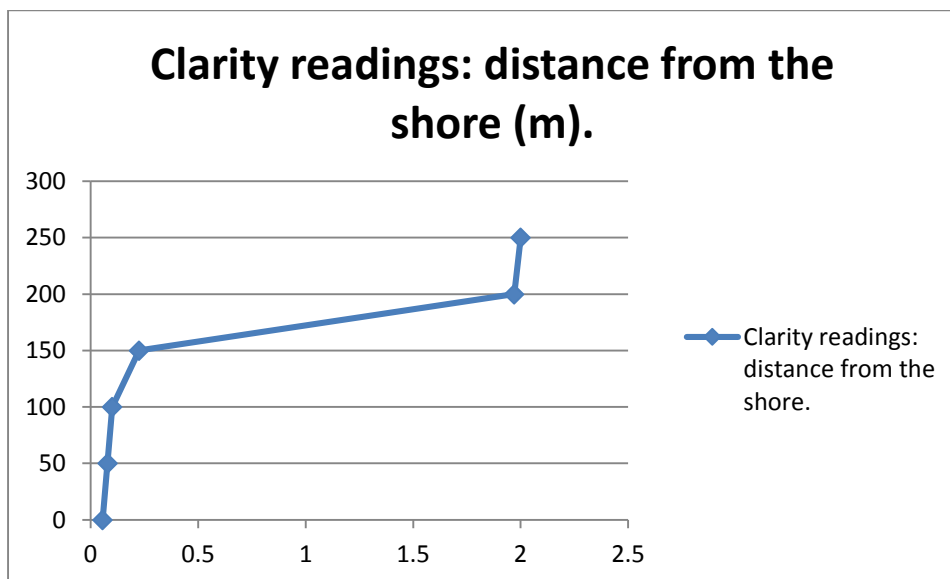
Note: This student also described a valid method, correctly identified key variables and processed raw data.

Purpose: To observe the clarity of sea water off the mouth of the Aparima River following a minor flood that introduced clay into the river and the sea. Clarity will be recorded using a secchi disc on the end of a two metre pole. Readings will be taken on each side of a boat.
(1)

Hypothesis: The further the river water travels into Foveaux Strait the clearer the water readings will be.

Results:

Straight line distance from the shore.	0m River mouth	50m	100m	150m	200m	250m
Secchi Reading	0.06m	0.075m	0.095m	0.20m	1.95m	>2.0m



Interpretation of the data:

The investigation carried out was to establish a pattern of how clay released during a minor flood affected sea water and to find out how far the clay went into the sea water before it had no effect on water clarity. The investigation is a pattern seeking investigation.

The results show that where the river water met the sea water the water was very dirty. This stayed the same until 150m from shore then suddenly cleared. This was because the river and sea waters mixed and clay dropped to the bottom of the sea bed. (2)

Earth and Space science behind the investigation:

a/ Water Density:

When river water and sea water meet there is no mixing between the two water bodies because the river water and the sea water have different densities. The river water with the low density sits on the sea water. They will eventually mix because of the tides but that takes time and the water can travel 150m before this happens.

b/ Flocculation:

When clay particles hit sea water they are flocculated. This means they form clumps and sink to the bottom of the sea bed. This is controlled by mixing and calcium metal. Calcium is in sea water because of calcium carbonate. (3)

Conclusion:

The change in water clarity as a river in a minor flood flowed out into Foveaux Strait showed a pattern of a sudden clearing between 100m and 150m off shore. This was due to the river and sea waters mixing and the clay dropped to the bottom of the sea bed.

The change in water clarity was due to the river waters dropping their clay particles and the clean sea water being observed after 150m. (4)

The experiment was valid and showed an expected trend in the data. Dirty water exists in Foveaux Strait until it gets mixed with sea water