



About Us

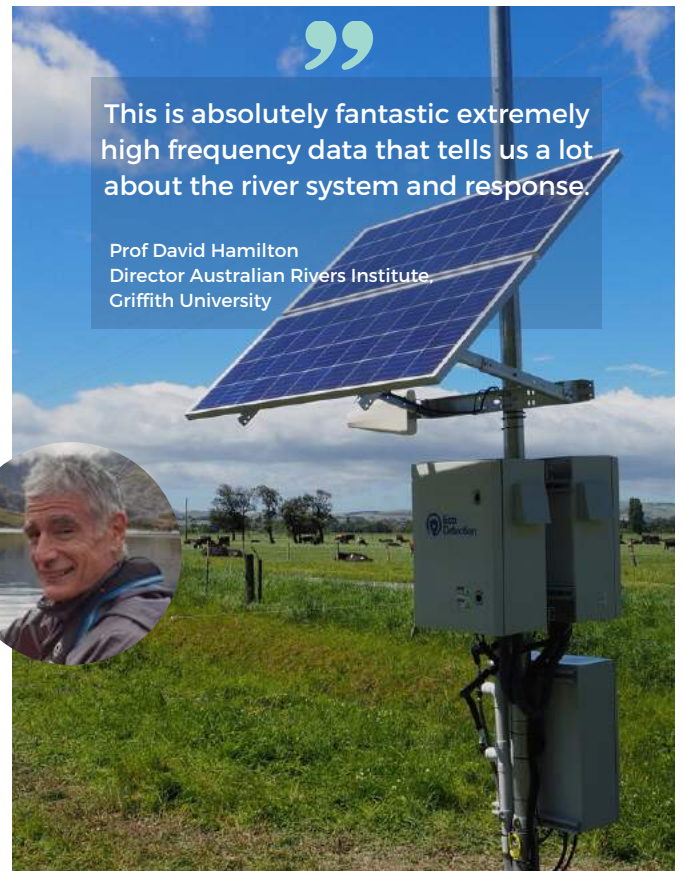
Eco Detection has automated the measurement of dissolved inorganics in the field using capillary zone electrophoresis (CZE), predominantly used in laboratories because it provides robust, high resolution data. It is a revolutionary multi-parameter system with an expandable measurement platform to target an array of analytes, including heavy metals and organics, across proposed future product iterations.

The Technology

CZE involves the separation of target analytes injected into a capillary. Different ionic species will travel at different speeds inside the capillary due to their individual properties, forming distinct groups as they move through. As each group passes the detector the number of ions in the group is determined to yield quantitative concentration measurements for each ionic species. Tuning of the capillary and electrolyte chemistry, along with precision engineering for the detection system, has enabled Eco Detection to achieve a unique level of sensitivity.

Data Services

Eco Detection's end-to-end data service for water quality measurements, provides end-users, operators and decision makers with the critical information needed to manage their waterways and water assets effectively.



“
This is absolutely fantastic extremely high frequency data that tells us a lot about the river system and response.
Prof David Hamilton
Director Australian Rivers Institute,
Griffith University

- Reduce energy consumption in wastewater treatment plants
- Prove water is safe to drink or use for irrigation
- Measure waterways hourly, not monthly
- Provide forensic grade data for research and action
- Reduce risks associated with manual sampling

Selection of Partners & Stakeholders



State winner, Victoria and national runner up Sustainability and Environmental Solution



Ion-Q Series Technical Specifications

Analyte	Range (mg/L)	Analyte	Range (mg/L)
Nitrite as N (NO ₂ -N)*	0.03 - 50	Ammonium (NH ₄ -N)*	0.1 - 200
Nitrate as N (NO ₃ -N)*	0.03 - 50	Magnesium (Mg)	1.0 - 200
Fluoride (F)	0.1 - 10.0	Potassium (K)	1.0 - 200
Phosphate as P (PO ₄ -P)*	0.1 - 50	Calcium (Ca)	1.0 - 200
Chloride (Cl)	1.0 - 100	Sodium (Na)	1.0 - 200
Sulphate (SO ₄)	2.0 - 200	Lithium (Li)	1.0 - 200
Carbonate (CO ₃)	2.0 - 200	Iron (II) (Fe ²⁺)	0.3 - 100

Note:
Ion-Q+ features remotely adjustable sensitivity within the above ranges which can be adapted for prevailing site conditions.

*Independently validated by
 **Hill Laboratories**
 TRIED, TESTED AND TRUSTED

Ion-Q Series General	
Compatible water conditions	Conductivity ≤ 2,000 μS/cm Turbidity ≤ 1000 NTU
Operating temperature	-5°C to +40°C (23°F to 104°F) ambient temperature
Sampling rate	1-6 samples per day - 90 days/400 samples per service interval
Accuracy	± 10% or 0.1 mg/L, whichever is greater
Automatic calibration & protection	Internal self-calibration, fluidics & turbidity protection
Environmental rating	Ion-Q - IP 54 / External sub pump & sensors - IP 68
Power	Mains power 240 VAC input / Battery power 100 Ah *12V solar power: 300W - 350W solar panel
Connectivity	Internet via cellular or satellite / operation continuous without internet

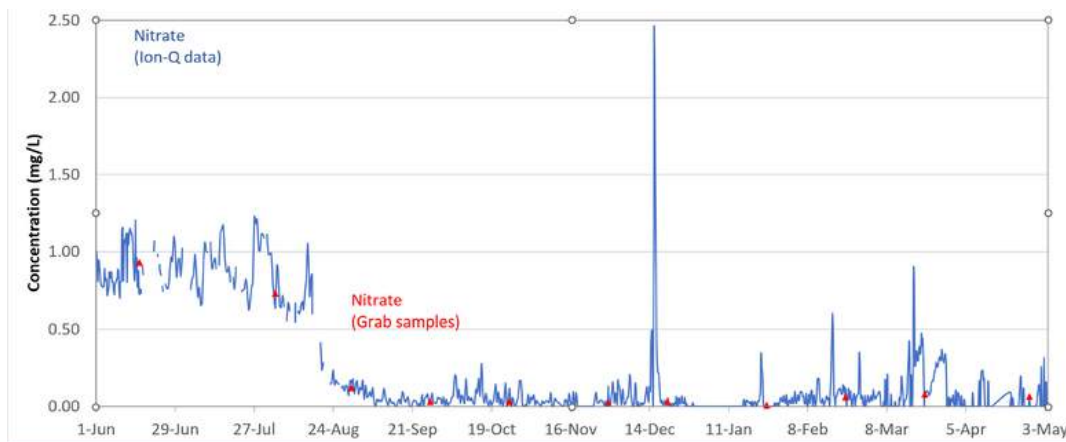
In addition to the direct ion concentration measurement, the Eco Detection Ion-Q system is capable of deployment with auxiliary sensors to measure associated water quality parameters at the same time. This enables the system to provide a more comprehensive view of the state of the water source through the same integrated data delivery channel. Auxiliary sensors that have been integrated with the device include: **turbidity, conductivity, pH, temperature and dissolved oxygen.**



Fully Autonomous System

- Each analysis calibrated against an internal standard
- Direct ionic measurement - no spectral absorption or inferred measurement
- No biofouling, no drift
- Up to 12 months continuous operation without servicing
- Operates anywhere - solar and satellite option
- Data available in the cloud within minutes

Ion-Q and Laboratory Comparison



Comparative data over 12 months, with monthly grab sample data in red.

Ion-Q data matches lab measurements, but provides richer detail on short term nitrate concentrations.

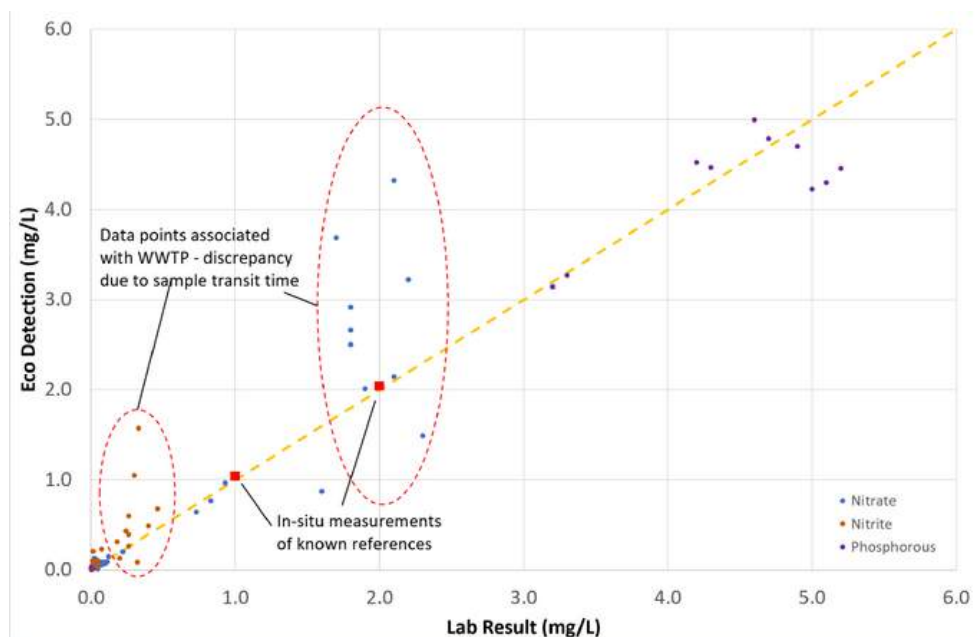
Improved data resolution shows timing of seasonal shifts and detects short-term run-off events.

Validation of Ion-Q against lab samples, correlation across more than 60 field samples.

Linear correlation across range of analytes and concentrations.

Significant variations (highlighted) for treated effluent, showing discrepancy due to sample transit time.

Ion-Q performance confirmed with in-situ reference measurement.



Monitoring the Derwent

Commencing in December 2021, the Derwent Estuary Program (DEP) supported by grant funding from The Ian Potter Foundation to purchase Eco Detection systems, deployed real-time water quality monitoring at key sites in the catchment over an initial period of three years.

- TasWater sewage treatment plant outfall
- Norske Skog Boyer pulp mill effluent
- Saltas fish hatchery effluent
- Meadowbank Vineyard
- Westerway Farm
- Downstream of major agriculture

DEP's commitment is to showcase Eco Detection to the Tasmanian Minister of Environment, CEOs, directors and other decision-makers across a wide range of industries and organisations to encourage uptake of our revolutionary product.

"The data obtained will lead to a better understanding of nutrient sources and allow DEP to calculate more accurate nutrient loads to help industry understand their nutrient discharges."

Dr Bernadette Proemse, Catchment Scientist



Water Recycling Plant Monitoring

An important milestone for the company's business in Australia, Eco Detection secured its first pilot with **Intelligent Water Networks** and water utility company, **Greater Western Water**. Intelligent Water Networks is a member organisation for Victoria's water companies and Department of Environment, Land, Water and Planning, established to help bring new technologies, from global sources, to market. An independent report on Eco Detection's performance will be written for review by IWN members.

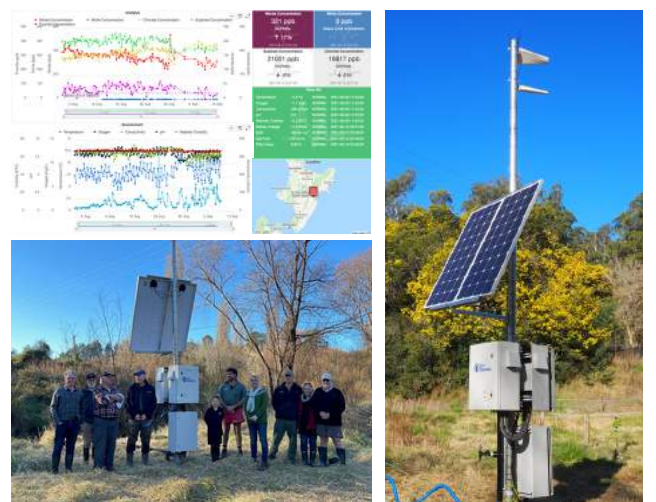
Eco Detection installed two units at Five Mile Creek, upstream and downstream of where excess recycled water volumes are discharged from the Woodend Recycled Water Plant. The plant produces Class C recycled water used to irrigate local farms, sports fields, large gardens and recreation areas. Greater Western Water has a license to discharge excess recycled water volumes to Five Mile Creek under strict conditions set by the Environment Protection Authority.



Continuous Improvement Strategy Hawke's Bay NZ

Working with the Mangaone Catchment Group, part of the national catchment forum run by Crown Research Institutes, Eco Detection and MyEnviro sought to demonstrate that water quality and land use can be linked in a verifiable way. Installed at Rissington Farm, Eco Detection provided real-time water quality data and MyEnviro, the land actions to a digital farm plan. For the first time, powerful shared data can raise awareness, help inform regulations (e.g. fertiliser caps/stocking rates) and ultimately create the behaviour change that can improve the quality of New Zealand's freshwater resources.

- Trends and patterns can be picked up faster due to the large sample data set collected e.g. @4 tests a day = 1460 per year - that would take 121 years at the rate of one test per month (the rate at which councils are currently collecting water samples).
- Communities become engaged and interested once they can see live data and trend analysis.
- Alarms may provide early warning systems for illegal dumping.



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