

Hydrology technician

Richard Keightley is a hydrology technician at NIWA in Hamilton. Richard collects and analyses hydrological data for the Water Resources Archive, Climate Database and National Rivers Water Quality Network and research projects.



So what do you actually do?

About half of my time is spent on the national water level, water quality and climate networks, while the other half is project work.

I keep 14 water level sites and 5 climate stations running, and do sampling for the National Rivers Water Quality Network. Every six weeks I visit the water level sites and do any maintenance required, downloading data from loggers and do gaugings as required. On my days in the office I process the gaugings, construct stage–discharge ratings and edit the data to meet ISO standards. Each quarter we process the data and send it to the archive in Christchurch. The climate stations require sensor checks and calibrations. I also visit people who are manual rainfall observers and meet with a dozen or so each year to calibrate their rain gauges. Each month I visit the six water quality network sites in our region and collect samples for analysis and do the field measurements, such as water clarity with a black disk, temperature and dissolved oxygen.

Recently we've been working to get all our water level sites telemetered so we can keep track of water levels from the office and find out when sensors stop working or are vandalised. It's been an interesting project as often the sites are in remote locations where cell phone coverage is patchy. So I've been working with NIWA Instrument Systems to develop new systems to link radios at the sites to cell phones located nearby on the tops of hills.

My project work is varied, but recently I've been monitoring constructed wetlands on dairy farms and worked on a big flood event sediment study. The flood event study at Raglan was interesting as I got to help construct six water level sites from scratch, so I helped put in the stilling wells, cat walks and instrumentation as well as do flow and sediment gaugings and work with automatic samplers.

What hours do you work?

At NIWA we work a 37.5 hour week and I generally spend 3 days each week out in the field. Most days out in the field are a minimum of 7.5 hours due to the travel involved and the nature of the work. I generally don't work on weekends. Some technicians do though, and are on call 24/7 – it depends what projects you're working on.

What equipment and software do you use?

I use a lot of specialised hydrology equipment, including current meters, velocity head rods, an acoustic doppler current profiler (which use sound to measure water speeds and depth), a range of data loggers and telemetry instruments, rain gauges, various climate sensors and field water quality instruments.

Richard's route

- ◆ Bachelor of Science in Physical Geography and Environmental Studies, including courses in hydrology, chemistry, biology, statistics and GIS.

Richard's tips



- ◆ Get a job as a summer student at NIWA and get to know people and the types of work they do
- ◆ Be prepared to take a job with any field team - they're located all over the country.

Who do you work for?

I work at NIWA, the National Institute of Water and Atmospheric Research. NIWA is a Crown Research Institute and key provider of atmospheric, freshwater and marine research in New Zealand.





We store and analyse all of our data using Tideda. I also use Flosys to collect data via radio or cell phone networks and TdGauge to process gaugings.

What skills do you need?

Essential skills for this job are computer literacy, good analytical skills for data processing and reporting, the ability to solve problems, and good communication skills. I spend a lot of time outdoors by myself, so good fitness, the ability to swim(!) and outdoor skills are important. I've also helped set up new sites which included building and construction work. A basic understanding of electronics and instrumentation is useful too. Time and project management are also important, as I have a flexible schedule depending on what needs to be done urgently and of course the weather!

Do you work alone or as part of a team?

I probably spend about $\frac{2}{3}$ of my time working independently and the remainder with other technicians and scientists.

What is good about your job?

I like the variety of work and interesting scientific projects. Being outside a lot of the time is great. I like solving problems and most of the time there's no one holding my hand – I need to work it out for myself. The work hours are flexible and it's a friendly work environment.

Is there any on-the-job training?

My first three months were spent with the field team in Rotorua getting basic on-the-job training. There are lots of training courses for technicians and I've done general hydrology, hydrology instrumentation, logger courses, 4WD and advanced driver training, first aid, working with heights and in confined spaces, water safety and boat handling. Dive courses are also available if you're interested.

Salary information

\$\$

- You could expect a starting salary for a position like mine in the range \$28,000 to \$35,000. Once employed, pay rises are based on performance.

Getting in



- Apply for a summer job and get to know the staff at NIWA. These positions are often not widely advertised so write a letter to the appropriate manager.
- Apply for an advertised position. Be prepared to go anywhere as the field teams are distributed all over the country and many are in smaller centres such as Whangarei, Wanganui, Nelson and Tekapo.

For more information – careers profiles, info on hydrology courses, thesis database, water information directory and other watery stuff – take a look at www.h2know.org.nz and www.hydrologynz.org.nz

This document was produced by Lucy McKergow with funding from

