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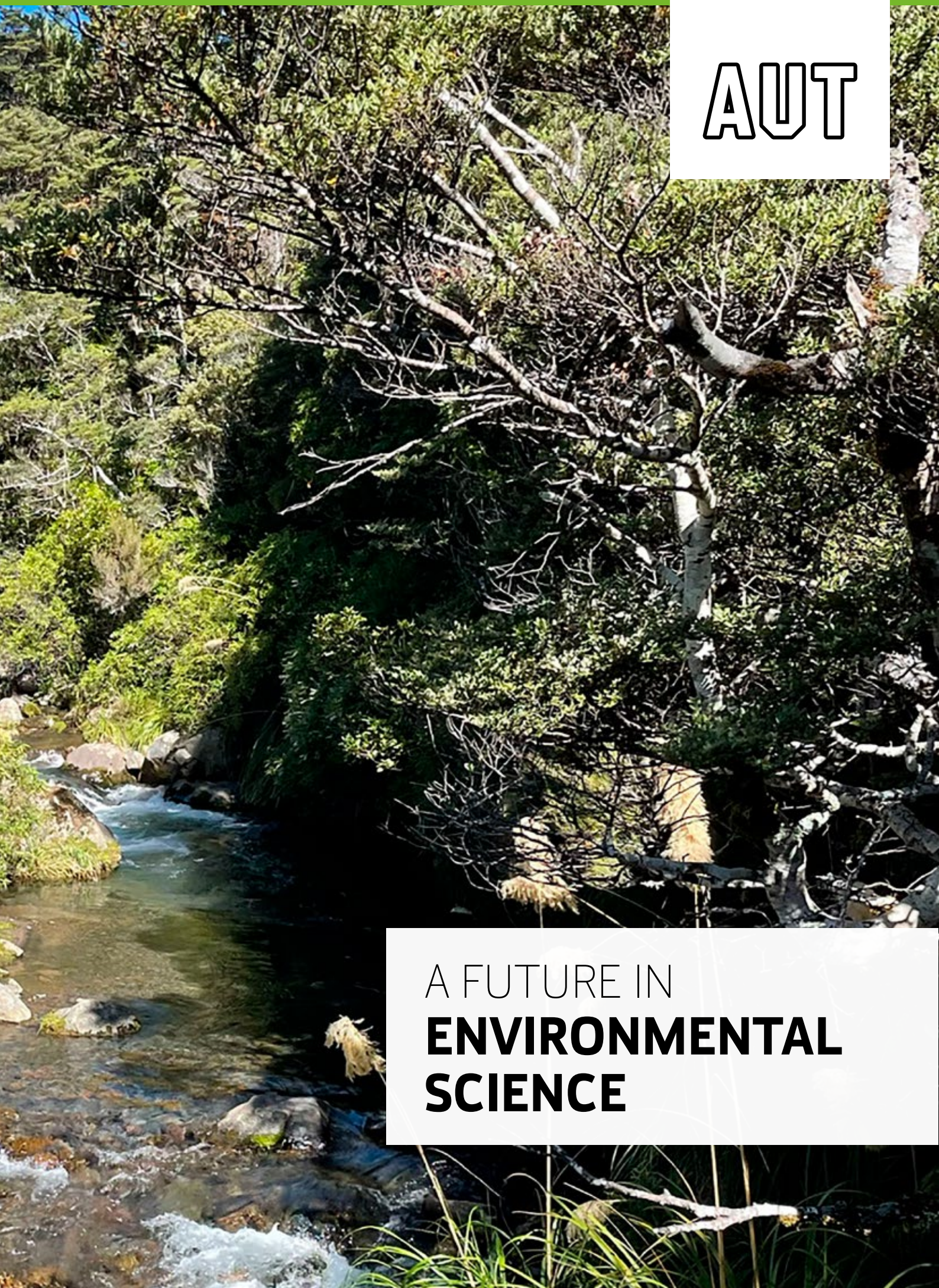


A FUTURE IN **ENVIRONMENTAL SCIENCE**

WHAT IS ENVIRONMENTAL SCIENCE ABOUT?

Our land and water – our environment – is our home. It sustains us by enabling us to grow food, to have fun, and be healthy and happy. It also sustains our native biodiversity – the many plant and animal species and important ecological processes – that comprise our precious and unique ecosystems in Aotearoa New Zealand. We urgently need young scientists to be the future decision makers – to use evidence-based thinking to determine how we should whakahaere (manage), manaaki (care for) and tiaki (safeguard) our environment into the future.

Environmental scientists investigate, quantify and work to understand the state of the land and water environment in relation to humans' past, present and proposed future activities. They must have a wide-ranging understanding of the environment, including from biotic (biological), abiotic (chemical/physical), and human-related (social, cultural and economic) perspectives. Additionally, the environmental scientist must be able to critically evaluate data, evidence and other available information to understand human impacts on the environment and to propose ways to mitigate these impacts.

Environmental scientists use appropriate scientific methods and data collection techniques and technologies to investigate and sample the different components of the environment. They know how to gather information, make sense of existing knowledge and scientific literature, and understand the laws and policies of environmental management. They will work with and communicate their science to landowners, iwi, the public, other scientists and government officials.

Studying to be an environmental scientist provides you with a means to make a difference in your career.

Do you want to help protect and improve the health of our natural world? Do you want to ensure the best decisions are being made to secure the sustainability of our country, and the world, into the future? If so, this may be the career for you.

OUTLOOK & TRENDS

Shortage of environmental specialists – The government is actively encouraging skilled environmental scientists from overseas to work in Aotearoa New Zealand through Immigration New Zealand's long-term skill shortage list. Employment opportunities are good for trained environmental scientists due to an overall shortage in New Zealand, according to careers.govt.nz. Therefore, the outlook for emerging environmental scientists is highly positive.

Environment and resources are central to New Zealand's economy – New Zealand's economic, social and cultural wellbeing is reliant on the integrity of our environment and ecosystems. Over the next 20 years, rising population and economic growth is expected to increase demand for New Zealand's agricultural and forestry products, while access to land and natural resources is likely to decline. Climate change will also impact on performance of all land-based productive industries. Environmental scientists will play an important role in promoting effective soil, water and nutrient management to ensure continued success of New Zealand's farmers, foresters and growers.

Freshwater governance and management – There are increasing incentives to change the way management decisions are made for New Zealand's freshwater resources. In 2020, the New Zealand Government introduced the Essential Freshwater policy and regulation reforms. These reforms, along with Te Mana o te Wai and the National Policy Statement for Freshwater Management, provide a decision making framework for councils, iwi and hapū, farmers and land managers, primary sector organisations, and community and environmental groups. Environmental scientists' work is critical to the implementation of these reforms to improve and sustain our country's freshwater.

Climate change and communities – Scientists from all specialisations acknowledge that climate change is one of the greatest challenges facing humanity. For example, recent weather events in New Zealand have highlighted how vulnerable our environment is in some regions to flooding, hillslope erosion and sediment loading of rivers. Environmental scientists have a critical role to play in assessing and monitoring the effects of such events on land and freshwater environments and in providing advice to landowners, communities, and agencies on best-practice land use and management in different environmental contexts.

WORK SETTINGS

There are three main areas of employment for environmental scientists.

Roles in the assessment, management and protection of terrestrial and freshwater environments within:

- Government agencies and institutes
- City or district councils
- Non-government organisations
- Environmental consultancies
- Iwi and hapū organisations

Research roles within:

- Crown Research Institutes (CRIs) such as Manaaki Whenua Landcare Research or the Department of Conservation
- Government agencies such as Ministry for the Environment
- Universities

Policy or evaluation roles within:

- Local government authorities – regional, city and district councils
- Crown entities – eg Environmental Protection Authority
- Private consultancies – eg providing environmental assessments for resource consents
- Iwi/hapū organisations

CAREER ROLE EXAMPLES

Environmental consultant – Can involve monitoring, measuring, and reporting on the abiotic and biotic components of the environment. Typically, involved in assessing environmental impacts, in terms of the effects of external influences such as pollutants, and provides advice to avoid or reduce harmful effects on the environment.

Ecologist – Monitors and assesses the condition of ecosystems, conducts research, engages with communities, and provides advice on conservation policies. Understands functional relationships within ecosystems to ensure the future sustainability and health of the natural environment. May be responsible for administration of databases, stakeholder collaborations, and application of taxonomy, nomenclature and labelling. This normally requires a postgraduate qualification.

Biodiversity Ranger – Carries out natural heritage conservation and biodiversity work programmes, actively working across a range of different projects, eg threatened species management, ecosystem restoration and animal pest control programmes. May include teaching, coaching, supporting and/or overseeing community groups and volunteers doing conservation work in the field.

Water Quality Technician – Provides technical support for research/consultancy work on water quality and pollution control related to wastewater and effluent discharges. May include development of natural treatment systems and mitigation measures involving algae ponds and water ways, wetlands, riparian buffers etc

Sustainable development planner – Works with central government, community groups, schools and businesses to achieve sustainable outcomes, such as the adoption of environmentally sustainable low carbon living practices. Builds and maintains key strategic relationships with internal and external stakeholders such as central government, iwi authorities, local boards, businesses and community groups.

SKILLS & KNOWLEDGE

Technical skills

- Well-rounded knowledge of environmental science, including specialist knowledge in at least one area such as water, or fauna and flora
- Knowledge of relevant regulations and policies, including understanding the effects human activities may have on the environment
- Strong environmental research and assessment skills
- Field skills, including the use of technology for environmental monitoring and measurement
- Good flora and fauna identification skills
- Awareness of health and safety best practie

General skills

- Ability to work in a team
- Excellent communication skills, particularly in explaining complex ideas to clients or co-workers who may not understand technical terms
- Good statistical and computer skills
- Strong project management skills
- Hands-on practical aptitude
- Competent time management and organisation skills, especially the ability to prioritise
- Capable problem-solver
- Understands how to interact with, and develop appropriate partnerships with, communities, iwi and other landowners
- Have understanding of tikanga Māori and responsibilities with regards to Te Tiriti o Waitangi

PERSONAL QUALITIES

- Lateral thinker
- Passionate about the environment and nature
- Logical, methodical and precise
- Flexible and quick to adapt to new projects or changing requirements
- Objective, enquiring and open to new ideas

SALARY GUIDE

	Salary (per year)
DOC Ranger (entry level)	$53,000-$69,000 depending on experience
Ecologist (1-4 years ' experience)	$57,000-$70,000 depending on experience
Environmental Consultant (1-5 years' experience)	$55,000-$91,000 (depending on experience and qualifications)
Sustainability Development Manager	$75,000-$110,000 (depending on experience and qualifications)

Sources: www.payscale.com/New Zealand, Department of Conservation/Seek NZ, Careers NZ

Salary range is indicative of the New Zealand job market at the time of publication (mid-2023) and should only be used as a guideline.

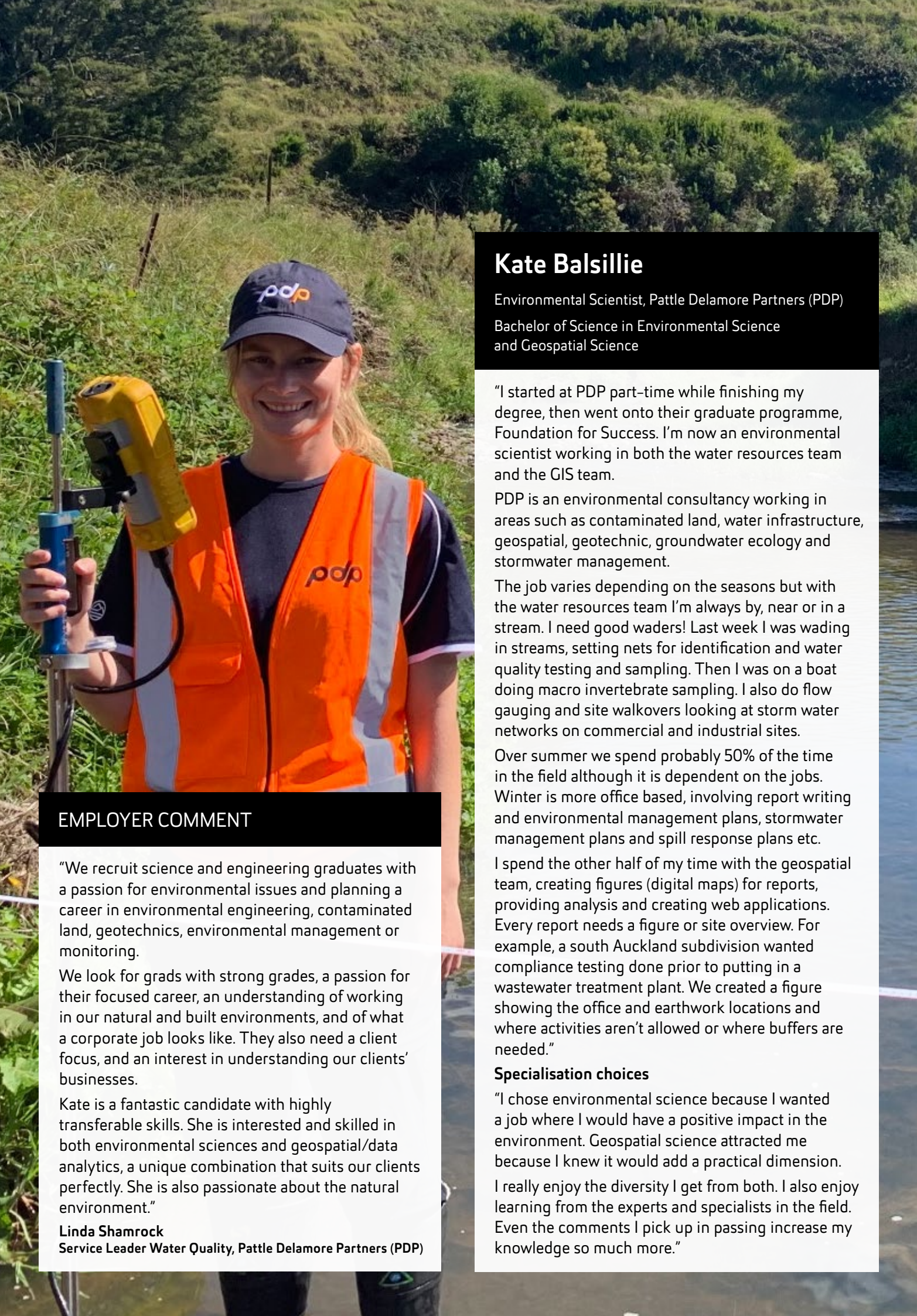
THE AUT APPROACH

Environmental Science is a major in AUT's Bachelor of Science degree programme, taught by academic experts from a wide range of backgrounds who span a range of environmental science disciplines. Final-year students can enrol in a research project that may involve a placement with private industry, the primary sector, or government agencies and institutes.

FURTHER STUDY OPTIONS

For those wanting more specialised study, there are postgraduate-level options in environmental science, including the Bachelor of Science (Honours), Postgraduate Certificate and Diploma in Science, the Master of Science and Doctor of Philosophy.

Environmental science research focuses on topics such as forest ecology, agroecology, restoration, geospatial science, statistics and modelling, soils and landscapes, carbon quantification, nature-based solutions, socio-ecology and sustainability.



Kate Balsillie

Environmental Scientist, Pattle Delamore Partners (PDP)

Bachelor of Science in Environmental Science and Geospatial Science

"I started at PDP part-time while finishing my degree, then went onto their graduate programme, Foundation for Success. I'm now an environmental scientist working in both the water resources team and the GIS team.

PDP is an environmental consultancy working in areas such as contaminated land, water infrastructure, geospatial, geotechnic, groundwater ecology and stormwater management.

The job varies depending on the seasons but with the water resources team I'm always by, near or in a stream. I need good waders! Last week I was wading in streams, setting nets for identification and water quality testing and sampling. Then I was on a boat doing macro invertebrate sampling. I also do flow gauging and site walkovers looking at storm water networks on commercial and industrial sites.

Over summer we spend probably 50% of the time in the field although it is dependent on the jobs. Winter is more office based, involving report writing and environmental management plans, stormwater management plans and spill response plans etc.

I spend the other half of my time with the geospatial team, creating figures (digital maps) for reports, providing analysis and creating web applications. Every report needs a figure or site overview. For example, a south Auckland subdivision wanted compliance testing done prior to putting in a wastewater treatment plant. We created a figure showing the office and earthwork locations and where activities aren't allowed or where buffers are needed."

Specialisation choices

"I chose environmental science because I wanted a job where I would have a positive impact in the environment. Geospatial science attracted me because I knew it would add a practical dimension.

I really enjoy the diversity I get from both. I also enjoy learning from the experts and specialists in the field. Even the comments I pick up in passing increase my knowledge so much more."

EMPLOYER COMMENT

"We recruit science and engineering graduates with a passion for environmental issues and planning a career in environmental engineering, contaminated land, geotechnics, environmental management or monitoring.

We look for grads with strong grades, a passion for their focused career, an understanding of working in our natural and built environments, and of what a corporate job looks like. They also need a client focus, and an interest in understanding our clients' businesses.

Kate is a fantastic candidate with highly transferable skills. She is interested and skilled in both environmental sciences and geospatial/data analytics, a unique combination that suits our clients perfectly. She is also passionate about the natural environment."

Linda Shamrock
Service Leader Water Quality, Pattle Delamore Partners (PDP)

USEFUL WEBSITES

Department of Conservation
doc.govt.nz

Environmental Institute of Australia and New Zealand Inc.
eianz.org

Ministry for the Environment
mfe.govt.nz

Ministry for Primary Industries
mpi.govt.nz

National Institute of Water and Atmospheric Research (NIWA)
niwa.co.nz/education-and-training

NZ Conservation Jobs
conservationjobs.co.nz

FURTHER INFORMATION

For the most up-to-date information on the study of environmental science, visit aut.ac.nz/sciences

For other Future Career Sheets visit: aut.ac.nz/careersheets

EMPLOYABILITY & CAREERS
For employability and career support, AUT students can book an appointment through https://elab.aut.ac.nz/
@AUTEmployabilityandCareers

FUTURE STUDENTS
Contact the Future Student Advisory team for more information: aut.ac.nz/enquire
futurestudents@aut.ac.nz
@AUTFutureStudents

CURRENT AUT STUDENTS
Contact the Student Hub Advisors team for more information: 0800 AUT UNI (0800 288 864)
aut.ac.nz/enquire | studenthub@aut.ac.nz

CITY CAMPUS
55 Wellesley Street East, Auckland Central

Connect with us now:

The information contained in this career sheet is correct at time of printing, mid 2023.