

SUMMER RESEARCH 2024/25

PROJECT ABSTRACT



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

PROJECT # 54

SUPERVISOR/S:	Associate Professor David Campbell
PROJECT TITLE:	Down the drain – what is the real hydrological role of farm drains in peatland agriculture?
FIELD:	Hydrology/Earth and Environmental Sciences
DIVISION/SCHOOL:	HECS - Te Aka Mātuatua School of Science
PROJECT LOCATION:	Hamilton

PROJECT ABSTRACT:

Waikato drained peatlands have become highly productive agricultural lands, yet they are hotspots for greenhouse gas emissions. Managing their water tables to shallower depths is the most effective mitigation method to reduce these large emissions, but this is challenging to achieve in practice. We do not fully understand the role of farm drains on in-field water table regimes or potential drain management opportunities that might allow for shallower water tables.

In this research project, you will contribute to installing hydrological monitoring systems within the drain networks at two farmed peatland sites. You will analyse and report on the initial data collected from the sites. You will work with a research team in a wider New Zealand-Ireland peatland GHG mitigation project.

STUDENT SKILLS:

- Good understanding of surface water hydrological processes and water balances.
- Confident in working with large datasets and willing to learn new software skills. Experience using Excel is essential. Experience using MATLAB is an advantage (but not essential).
- Confident in undertaking a range of tasks in the field, including working with instruments and field computers.

PROJECT TASKS:

1. Research the literature on drainage management in agricultural peatlands and the potential to reduce GHG emissions.
2. Prepare water level monitoring equipment for deployment at two research sites, including calibration checks.
3. Learn how to operate GPS surveying equipment and process data, create a map of farm drainage networks at each research site and contribute to choosing monitoring locations.
4. Contribute to the installation of hydrological monitoring stations and detailed site surveying.
5. Undertake regular field observations, download and process water level data.
6. Create a final research poster describing the initial outcomes of the study.
7. Learn how to access multiple sources of ancillary data from UoW and external databases.
8. Learn how to use MATLAB to carry out data analysis tasks and create presentation outputs (graphs and tables).

EXPECTED OUTCOMES:

- Student's Research Poster (as per clause 6 of the [Scholarship regulations](#))
- Establishment of a robust network of drain water level sensors and a set of ongoing monitoring procedures.
- Create detailed maps of farm drainage networks and flows at two farmed peatland sites.

