



3 PhD Positions in hydrological impacts, modelling and innovative solutions to prevent environmental pollution from managed peatlands

We are looking for 3 highly motivated PhD students to work on an interdisciplinary four-year project funded by the Environmental Protection Agency (Ireland) investigating **Strategies to improve Water quality from Managed Peatlands (SWAMP project)**. Starting date: 01/9/2019.

The primary objective of SWAMP is to develop an interdisciplinary approach to quantify the pressures on waters arising from drained/extracted peatlands and develop appropriate regulatory measures, sustainable land use management and innovative technologies to ensure the status of water bodies is protected, maintained or improved in line with the requirements of national and international environmental standards. The key objectives of the project are as follows:

- To improve our understanding of the hydrology, hydrogeology, water balances and nutrient exports from drained and extracted peatlands.
- To investigate the impacts and pressures on water quality (chemistry, aquatic biota and hydromorphology) arising from the drainage and mining of peatlands by identifying contaminants pressure zones and assessing the significance and extent of these environmental impacts vis-à-vis the Water Framework Directive and Flood Directive targets.
- To evaluate environmental protection measures in order to develop best practices guidelines by appraising and developing a) robust water purification methods and b) sustainable land-use management practices including restoration/rewetting and after-use of cutaway/cutover bogs.

The 3 PhD candidates will work within a UCD multidisciplinary team comprised of researchers from Peatland Science / Freshwater Ecology / Environmental Hydrology Research Groups, as well as industry collaborators.

Project Principal Investigators: [Dr Florence Renou-Wilson](#) (Peatland Scientist); [Ass. Prof. Mary Kelly-Quinn](#) (Freshwater Ecologist); [Ass. Prof. Fiachra O'Loughlin](#) (Hydrological modelling) and [Prof. Michael Bruen](#) (Prof. of Environmental Hydrology).

[PhD 1: Experimental studies evaluating water pollution mitigation measures at drained and extracted peatland sites and development of land use management strategies.](#)

[PhD 2: Investigations into the distal downstream influence of peat extraction and peat drainage activities on the physico-chemical composition and biodiversity of associated aquatic habitats.](#)

[PhD 3: Modelling of the effects of drainage and water treatment on the hydrology, hydro-morphology and hydrochemistry of industrial cutaway peatlands.](#)

UCD is committed to creating an inclusive environment where diversity is celebrated, and everyone is afforded equality of opportunity. To that end, the university adheres to a range of equality, diversity and inclusion policies. We encourage applicants to consult those policies [here](#).

PhD 1: Experimental studies evaluating water pollution mitigation measures at drained and extracted peatland sites and development of land use management strategies.

We are looking for a highly motivated PhD student to investigate **water pollution mitigation measures** at drained **peatlands** sites with specific tasks:

- to carry out experimental field trials to develop technical solutions and mitigation measures to manage the peat/water interface in order to improve water quality.
- to develop guidance to mitigate potential pollution impacts of the peat extraction industry.
- to assess the environmental profile of rehabilitation plans and propose land use management practice for future developments/rehabilitation strategies.

The PhD candidate is expected to: (i) work in collaboration with the SWAMP team, in particular other PhD students, both in the field and in the laboratory; (ii) carry out field experiments and therefore be comfortable working in a peatland environment; (iii) collect and analyse multi-sourced datasets; (iv) develop management strategies in collaboration with the team.

Consideration will be given to candidates possessing (i) excellent English oral and written communication skills, (ii) a background in environmental analysis/biology or environmental engineering (emphasis on lab and/or field work would be an advantage), (iii) data handling and analysis skills and (iv) a full driving licence.

The candidate will be embedded in the School of Biology and Environmental Science and will benefit from interaction with a thriving community of postgraduate students, postdocs, lecturers and professors. One unique feature of the School is the inter-disciplinary nature of its activities, providing students and scientists alike with critical knowledge and perspective about environmental monitoring and solutions. The position is funded for a period of **four** years. The funding package includes a tax-free stipend of **€17,000** per annum plus EU Tuition Fees at the UCD rate.

Applicants should send a detailed CV, letter of motivation (max 2 pages, single spaced), transcripts and the names of two referees to Dr Florence Renou-Wilson Florence.Renou@ucd.ie by no later than July 31st 2019. Anticipated start date is September 2019.

	Essential	Desirable
Qualifications	Candidates must have an honours Level 8 degree in science or engineering or a related discipline	Masters in Environmental Science/Agriculture/Engineering.
Skills	Good communication and writing skills. Good time management skills. Aptitude for multidisciplinary research approaches.	Fieldwork ability GIS software (Arcgis or QGIS).
Knowledge	Background in environmental analysis (soil, water and vegetation).	Background in environmental analysis with an emphasis on lab / field work Familiarity with peatland environments.
Behavioural competencies	Ability to work as part of a team, including collaboration with other disciplines but also independently. Strives for high quality of work and demonstrates commitment to the project. Ability to communicate effectively to enable knowledge and technology transfer.	

PhD 2: Investigations into the distal downstream influence of peat extraction and peat drainage activities on the physico-chemical composition and biodiversity of associated aquatic habitats

We are looking for a highly motivated PhD student to assess the extent, significance and causes of the impacts of peatland drainage and extraction on the health of downstream aquatic bodies, with specific tasks:

- to set up a field hydro-chemical sampling strategy and regime.
- to carry out hydromorphological assessment.
- to conduct aquatic biota assessment.

The PhD candidate is expected to: (i) work in collaboration with the SWAMP team, in particular other PhD students, both in the field and in the laboratory; (ii) collect field data and therefore be comfortable in working in peatland/freshwater environments; (iii) collect and analyse multi-sourced datasets; (iv) produce a spatio-temporal evaluation of potential hydrological impacts associated with drained peatlands.

Consideration will be given to candidates possessing (i) a background in environmental analysis/biology (emphasis on lab and/or field work would be an advantage), (iii) lab and fieldwork skills, (iv) excellent English oral and written communication skills and (v) a full driving licence.

The candidate will be embedded in the School of Biology and Environmental Science and will benefit from interaction with a thriving community of postgraduate students, postdocs, lecturers and professors. One unique feature of the School is the inter-disciplinary nature of its activities, providing students and scientists alike with critical knowledge and perspective about environmental monitoring and solutions. The position is funded for a period of **four** years. The funding package includes a tax-free stipend of **€17,000** per annum plus EU Tuition Fees at UCD rate.

Applicants should send a detailed CV, letter of motivation (max 2 pages, single spaced), transcripts and the names of two referees to Ass. Prof. Mary Kelly-Quinn (Mary.Kelly-Quinn@ucd.ie) by no later than July 31st 2019. Anticipated start date is September 2019.

	Essential	Desirable
Qualifications	Candidates must have an honours Level 8 degree in environmental science or a related discipline.	A Masters degree in Environmental Science.
Skills	Good communication and writing skills Good time management skills.	Lab and fieldwork ability GIS software (Arcgis or QGIS).
Knowledge	Background in environmental analysis.	Familiarity with freshwater environments.
Behavioural competencies	Ability to work as part of a team, including collaboration with other disciplines. Strives for high quality of work and demonstrates commitment to the project. Ability to communicate effectively to enable knowledge and technology transfer.	

PhD 3: Modelling of the effects of drainage and water treatment on the hydrology, hydro-morphology and hydrochemistry of industrial cutaway peatlands.

We are looking for a highly motivated PhD student to study and numerically model the impact of drainage and management measures on water flows from industrial cutaway peatlands. The successful candidate will be based in the UCD Dooce Centre for Water Resources Research in the UCD School of Civil Engineering. The proposed research includes the following tasks:

- 1) Experimental field work, including site instrumentation to measure relevant fluxes and assist in geophysical surveys, to characterise the study sites;
- 2) Hydrological and water quality modelling. This includes the i) evaluation of existing models available for peat hydrology; ii) determining the relevant water and chemical mass balance and transformation relationships, and iii) develop and apply a numerical model to field measurement sites to simulate the important influences on the hydrological and solute fluxes and predict the effects of management measures.

In addition, the researcher is expected to: (i) work in collaboration with the SWAMP team, in particular other PhD students, both in the field and in the laboratory; (ii) carry out field experiments and therefore be comfortable in working in peatland environment; and (iv) develop management strategies in collaboration with the team.

Consideration will be given to candidates possessing (i) excellent English oral and written communication skills, (ii) aptitude or proven ability in numerically-oriented computer programming or model development, and (iii) an understanding of hydrological and water quality processes.

The position is available from September 2019 onwards and is funded for a period of **four** years. The funding package includes a scholarship of **€17,000** per annum plus UCD Tuition fees at EU rates. Applicants should send a detailed CV, letter of motivation (max 2 pages, single spaced), transcripts and the names of two referees to Ass. Prof. Fiachra O’Loughlin Fiachra.Oloughlin@ucd.ie by later than July 31st 2019. Anticipated start date is September 2019.

	Essential	Desirable
Qualifications	Candidates must have an honours Level 8 degree in science or engineering or a related discipline.	A postgraduate degree in Environmental Science or Engineering. A background in the environmental sciences or engineering with numerical modelling would be an advantage.
Skills	Good communication and writing skills, to enable knowledge and technology transfer. Good time management skills. Aptitude for computer programming.	C++, Python or other relevant programming language.
Knowledge	Understanding of hydrological processes.	Familiarity with peatland hydrology; hydrogeology; or water quality related processes.
Behavioural competencies	Ability to work as part of a team, including collaboration with other disciplines . Strives for high quality of work and demonstrates commitment to the programme.	