



## Post Specification

<b>Post Title:</b>	PhD Studentship – Geothermal Energy
<b>Post Status:</b>	Full-time (36 months – commencing April 2025)
<b>Research Group / Department / School:</b>	Dept of Civil, Structural & Environmental Engineering, Trinity College Dublin, the University of Dublin
<b>Location:</b>	Dept of Civil, Structural & Environmental Engineering, Trinity College Dublin, the University of Dublin College Green, Dublin 2, Ireland
<b>Reports to:</b>	Dr Patrick Morrissey Dr Laurence Gill
<b>Terms &amp; Conditions:</b>	Tax free Stipend: €25,000 per annum EU Fees, up to a maximum of €5,750 per annum
<b>Hours of Work:</b>	40 hours per week
<b>Closing Date:</b>	12 Noon (GMT), [07 March 2025]

**NOTE: Applicants must have been resident in an EU member state for 3 out of the last 5 years to be eligible for EU fees**

## Post Summary

### Post summary

The successful PhD candidate will work alongside a team on the URBAN-GeoHeat project. This project aims to assess the feasibility of geothermal energy as a source of district heating for residential developments in Dublin. The project will carry out intensive monitoring of a residential development incorporating shallow (<25m) foundation piles. Groundwater temperature and gradient will be monitored through the installation of monitoring boreholes equipped with loggers. Temperature profiles at depth within the piles will be recorded using thermocouples attached to data loggers. A small-scale prototype involving geothermal loops

will also be installed within a number of these foundation piles which will be connected to a prototype geothermal heating system. The goal of this prototype is not to test implementation of district heating at scale but to test and demonstrate a working prototype in real world conditions to investigate feasibility for construction and operation of such a systems. It will also serve as a flagship demonstration of how district heating linked to geostructures can be incorporated into design in new developments in Dublin going forward. The collected data will be used to assess temporal variations in performance against changing climatic and energy demand profiles and to develop numerical models of each system in terms of heat transfer and groundwater flow. These calibrated models will be then used to evaluate potential optimised system configurations to gain more heat from the same footprint. Overall, the results of this study should help to stimulate the somewhat nascent concept of district heating as a realistic future approach to more sustainable energy management in urban areas of Ireland.

The successful PhD researcher will be involved in some or all of the following tasks:

- 1) Fieldwork involving instrumentation and monitoring of foundation piles and groundwater boreholes
- 3) Computational Fluid Dynamics (CFD) Modelling [may involve groundwater modelling with heat transfer depending on the chosen candidate]
- 4) Energy calculations and life cycle assessments (LCA analysis)
- 5) Conducting strategic policy review

#### **Standard Duties and Responsibilities of the Post**

- Fieldwork at a prototype geothermal installation
- CFD Numerical modelling / Thermal Groundwater Modelling
- Technical report writing
- Engaging with stakeholders and organisation of stakeholder workshops
- Attendance and presentation at technical meetings and workshops
- Preparing academic manuscripts
- Presentation of results at national and international conferences.

Publishing of papers in high-ranking academic journals will be a high priority.

## **Funding Information**

The project is fully funded by the Irish Sustainable Energy Authority

## **Person Specification**

The ideal candidate will be an enthusiastic, self-motivated researcher with interests in the renewal energy, heat transfer / fluid physics, groundwater and mechanical or environmental engineering.

## **Qualifications**

### Essential

- Honours Degree (minimum 2:1) in a relevant discipline (mechanical engineering, physics, environmental or natural science, civil and environmental engineering or another related discipline) from an internationally recognised institution.

### Desirable

- A Masters level qualification in mechanical engineering / physics / environmental engineering or geology would be desirable.

## **Knowledge & Experience (Essential & Desirable)**

### Essential

- Knowledge of geothermal energy and heat transfer in fluids / fluid dynamics
- Experience in fieldwork and/or instrumentation
- A strong motivation for research and be able to demonstrate ability in data analysis, statistics and programming (R and PYTHON) or demonstrate the capacity to develop such skills.
- Demonstrated organisational skills, time management and ability to work to priorities.
- Ability to write research reports or other publications to a publishable standard.

### Desirable

- Experience in use of CFD software
- Experience in instrumenting field study sites
- Experience in geology and/or groundwater modelling
- Full clean drivers licence.

## Skills & Competencies

### Essential

- Strong proficiency in spoken and written English is required, together with excellent written and oral communication skills – in order to be shortlisted for interview, you must meet the TCD English speaking requirements so please provide evidence in your application.
- Applicants whose first language is not English must demonstrate on application that they meet TCD’s English language requirements and provide all necessary documentation.

## Application Procedure

Interested applicants should submit, within a single PDF document, a 2-page max CV with educational background, transcripts of degree results, list of publications and conference presentations, a short (1–2 page) letter of motivation and contact details for 2 referees submitted. The motivation letter should clearly state how the applicant’s research interests and skills relate to the research project outlined above. Send these directly to:-

Dr Patrick Morrissey

Patrick.morrissey@tcd.ie

## Further Information for Applicants

URL Link to Area	<a href="http://www.tcd.ie">www.tcd.ie</a>
URL Link to Human Resources	<a href="https://www.tcd.ie/hr/">https://www.tcd.ie/hr/</a>

## **Trinity College Dublin, the University of Dublin**

Trinity is Ireland's leading university and is ranked 98th in the world (QS World University Rankings 2023). Founded in 1592, the University is steeped in history with a reputation for excellence in education, research and innovation.

Located on an iconic campus in the heart of Dublin's city centre, Trinity has 18,000 undergraduate and postgraduate students across our three faculties – Arts, Humanities, and Social Sciences; Engineering, Mathematics and Science; and Health Sciences.

Trinity is ranked as the 12th most international university in the world (Times Higher Education Rankings 2020) and is also the highest ranked university in Ireland.

The pursuit of excellence through research and scholarship is at the heart of a Trinity education, and our researchers have an outstanding publication record and strong record of grant success. Trinity has developed 19 broad-based multidisciplinary research themes that cut across disciplines and facilitate world-leading research and collaboration within the University and with colleagues around the world. Trinity is also home to 5 leading flagship research institutes:

- Trinity Biomedical Sciences Institute (TBSI)
- Trinity College Institute of Neuroscience (TCIN)
- Trinity Translational Medical Institute (TTMI)
- Trinity Long Room Hub Arts and Humanities Research Institute (TLRH)
- Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN)

Trinity is 1st in Europe for Producing Entrepreneurs for the 7th year in a row and Europe's only representative in the world's top-50 universities (Pitchbook University Report 2021-2022).

Trinity is home to the famous Old Library and to the historic Book of Kells as well as other internationally significant holdings in manuscripts, maps and early printed material. The

Trinity Library is a legal deposit library, granting the University the right to claim a copy of every book published in Ireland and the UK. At present, the Library's holdings span approximately 6.5 million printed items, 400,000 e-books and 150,000 e-journals. With over 120,000 alumni, Trinity's tradition of independent intellectual inquiry has produced some of the world's finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureates), the mathematician William Rowan Hamilton and the physicist Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland Mary Robinson. This tradition finds expression today in a campus culture of scholarship, innovation, creativity, entrepreneurship and dedication to societal reform.

### **Rankings**

Trinity College Dublin is the top ranked university in Ireland. Using the QS methodology we are ranked 98<sup>th</sup> in the world and using the Times Higher Education World University Ranking methodology we are 146<sup>th</sup> in the World.

- Trinity College Dublin is Ireland's No.1 University (QS World University Ranking 2023, Times Higher Education Rankings 2022)
- Trinity is ranked 98<sup>th</sup> in the World (QS World University Ranking 2023)
- Trinity is ranked No.1 in Europe for Producing Entrepreneurs for the 7<sup>th</sup> year in a row Pitchbook 2021-2022

Full details are available at: [www.tcd.ie/research/about/rankings](http://www.tcd.ie/research/about/rankings).

## **The Selection Process in Trinity**

The Selection Committee (Interview Panel) may include members of the Academic and Administrative community together with External Assessor(s) who are expert in the area. Applications will be acknowledged by email. If you do not receive confirmation of receipt within 1 day of submitting your application online, please contact the named Recruitment Partner on the job specification immediately and prior to the closing date/time.

Given the degree of co-ordination and planning to have a Selection Committee available on the specified date, the University regrets that it may not be in a position to offer alternate selection dates. Where candidates are unavailable, reserves may be drawn from a shortlist. Outcomes of interviews are notified in writing to candidates and are issued no later than 5 working days following the selection day.

In some instances the Selection Committee may avail of telephone or video conferencing. The University's selection methods may consist of any or all of the following: Interviews, Presentations, Psychometric Testing, References and Situational Exercises.

It is the policy of the University to conduct pre-employment medical screening/full pre-employment medicals. Information supplied by candidates in their application (Cover Letter and CV) will be used to shortlist for interview.

Applications from non-EEA citizens are welcomed. However, eligibility is determined by the Department of Business, Enterprise and Innovation and further information on the Highly Skills Eligible Occupations List is set out in Schedule 3 of the Regulations <https://dbei.gov.ie/en/What-We-Do/Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Highly-Skilled-Eligible-Occupations-List/> and the Ineligible Categories of Employment are set out in Schedule 4 of the Regulations <https://dbei.gov.ie/en/What-We-Do/Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Ineligible-Categories-of-Employment/> . Non-EEA candidates should note that the onus is on them to secure a visa to travel to Ireland prior to interview. Non-EEA candidates should also be aware that even if successful at interview, an appointment to the post is contingent on the securing of an employment permit.

## **Equal Opportunities Policy**

Trinity is an equal opportunities employer and is committed to employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race, religious belief, sexual orientation or membership of the travelling community. On that basis we encourage and welcome talented people from all backgrounds to join our staff community. Trinity's Diversity Statement can be viewed in full at <https://www.tcd.ie/diversity-inclusion/diversity-statement>.



## Application Procedure

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Applicants should submit a full Curriculum Vitae to include the names and contact details of 2 referees (including email addresses), to:-

**Dr Patrick Morrissey**

**patrick.morrissey@tcd.ie**



**UNIVERSITY  
VACANCIES IRELAND**  
universityvacancies.com

