PhD Advert Template

Project title: Energy-SuDS: The potential of urban Green Infrastructure for decarbonising heating and cooling.

Project ID *(optional)*:

Accept all year-round applications

Funding information: Self-funded students only

Project description: There is no more important challenge in engineering than that presented by climate change. This project is at the cutting-edge of this challenge as it seeks to explore opportunities to both decarbonise our single greatest energy use (space heating and cooling) in combination with sustainable, nature-based solutions to adapt our urban areas to cope with ever-increasing extremes in weather e.g., high intensity rainfall induced flooding, prolonged drought and heat waves. Sustainable Drainage Systems (SuDS) are a form of increasingly wide-spread Green Infrastructure, offering multiple benefits besides the management of urban runoff. Ground Source Heat is a well-established technology for providing low-carbon heating/cooling that exploits buried heat exchangers in a variety of forms. Combining these approaches is a potential game-changer in how we can meet the long-term needs of society.

This project broadly aims to investigate the untapped potential of co-locating ground source heat exchangers in SuDS to improve efficiency and uptake of both technologies. Based at the [UKCRIC National Green Infrastructure Facility](https://www.ukcric.com/facilities/national-green-infrastructure-facility/) at Newcastle University, the project will benefit from state-of-the-art laboratories and a network of engaged industry partners.

If you think you are up to the challenge, please feel free to make informal enquiries and/or explore our previous work in this area in the articles listed below.

*Newcastle University is committed to being a fully inclusive Global University which actively recruits, supports and retains colleagues from all sectors of society. We value diversity as well as celebrate, support and thrive on the contributions of all our employees and the communities they represent. We are proud to be an equal opportunities employer and encourage applications from everybody, regardless of race, sex, ethnicity, religion, nationality, sexual orientation, age, disability, gender identity, marital status/civil partnership, pregnancy and maternity, as well as being open to flexible working practices.*

References (optional):

1. Loveridge F, Schellart A, Rees S, Stirling R, Taborda D, Tait S, Alibardi L, Biscontin G, Shepley P, Shafagh I, Shepherd W, Yildiz A, Jefferson B. [The potential for heat recovery and thermal energy storage in the UK using buried infrastructure](https://eprint.ncl.ac.uk/281575). Proceedings of the Institution of Civil Engineers - Smart Infrastructure and Construction 2022, **175**(1), 10-26.

2. Yildiz A, Stirling RA. [Thermo-hydrological behaviour of green infrastructure: a comparative field and laboratory study](https://eprint.ncl.ac.uk/269332). Geomechanics for Energy and the Environment 2021, **25**, 1-11.

3. Yildiz A, Stirling R. [Ground heat exchange potential of Green Infrastructure](https://eprint.ncl.ac.uk/280157). Geothermics 2022, **101**, 1-12.

Application enquires: Ross Stirling[*https://www.ncl.ac.uk/engineering/staff/profile/rossstirling.html*](https://www.ncl.ac.uk/engineering/staff/profile/rossstirling.html)

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PhD Disciplines & Subject areas

Agriculture

[ ]  agricultural sciences

[ ]  agricultural technology

[ ]  arable farming

[ ]  livestock farming

[ ]  forestry & arboriculture

[ ]  other

Anthropology

[ ]  biological anthropology

[ ]  social anthropology

[ ]  other

Architecture, Building & Planning

[ ]  architecture

[ ]  built environment

[ ]  construction management

[ ]  landscape architecture

[ ]  rural planning

[ ]  surveying

[ ]  urban planning

[ ]  other

Biological Sciences

[ ]  bacteriology

[ ]  behavioural biology

[ ]  biochemistry

[ ]  biodiversity

[ ]  bioinformatics

[ ]  biophysics

[ ]  biotechnology

[ ]  cancer biology

[ ]  cell biology

[ ]  developmental biology

[ ]  ecology

[ ]  ecotoxicology

[ ]  entomology

[ ]  environmental biology

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[ ]  molecular biology

[ ]  molecular genetics

[ ]  neuroscience

[ ]  parasitology

[ ]  plant biology

[ ]  plant cell biology

[ ]  reproductive biology

[ ]  structural biology

[ ]  systematic biology

[ ]  virology

[ ]  zoology

[ ]  other

Business & Management

[ ]  accounting

[ ]  business

[ ]  e business

[ ]  education management

[ ]  event management

[ ]  hospitality

[ ]  human resource management

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[ ]  marketing

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Chemistry

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Communication & Media Studies

[ ]  broadcast media

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Computer Science

[ ]  artificial intelligence

[ ]  computer architectures

[ ]  computer vision

[ ]  computer graphics

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Creative Arts & Design

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Economics

[ ]  econometrics

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Education

[ ]  further education

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[ ]  primary education

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Engineering

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[ ]  petroleum engineering

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[ ]  other

Environmental Sciences

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[x]  hydrology

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[ ]  pollution

[x]  soil science

[ ]  other

Finance

[ ]  actuarial science

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[ ]  insurance

[ ]  investment

[ ]  taxation

[ ]  other

Food Sciences

[ ]  food hygiene

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Forensic and Archaeological Sciences

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Geography

[ ]  agricultural geography

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Geology

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History & Archaeology

[ ]  african history

[ ]  american history

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[ ]  asian history

[ ]  australasian history

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[ ]  economic history

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Information Services

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Languages, Literature & Culture

[ ]  african studies

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Law

[ ]  criminal law

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[ ]  contract law

[ ]  property law

[ ]  other

Linguistics & Classics

[ ]  ancient greek

[ ]  celtic studies

[ ]  classics

[ ]  latin

[ ]  linguistics

[ ]  other

Materials Science

[ ]  ceramics

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[ ]  metallurgy

[ ]  polymers

[ ]  textiles

[ ]  other

Mathematics

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[ ]  applied statistics

[ ]  computational mathematics

[ ]  data analysis

[ ]  engineering mathematics

[ ]  mathematical modelling

[ ]  medical statistics

[ ]  operational research

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[ ]  pure mathematics

[ ]  statistics

[ ]  stochastic processes

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Medicine

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Nursing & Health

[ ]  adult nursing

[ ]  community nursing

[ ]  counselling

[ ]  dental nursing

[ ]  environmental health

[ ]  health informatics

[ ]  medical nursing

[ ]  mental health nursing

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Philosophy

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Physics

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[ ]  theoretical physics

[ ]  other

Politics & Government

[ ]  development studies

[ ]  government

[ ]  international relations

[ ]  politics

[ ]  public policy

[ ]  other

Psychology

[ ]  child psychology

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[ ]  other

Sociology

[ ]  criminology

[ ]  disability studies

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[ ]  other

Sport & Exercise Science

[ ]  sport coaching

[ ]  sport development

[ ]  sport performance

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Theology & Religious Studies

[ ]  divinity

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Veterinary Sciences

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