

**Research Fellow: Marine Sensing**

# **Recruitment Pack**

**UHI | NORTH HIGHLAND**



# Summary

**JOB TITLE:** Research Fellow: Marine Sensing

**SECTION:** Environmental Research Institute (ERI), UHI North Highland

**SCALE POINT RANGE:** £31,066 - £33,641 (Postdoctoral Researcher) or £36,467 - £39,420 (Research Fellow)

**TERM:** Initially 2 years (subject to probationary period) with prospect to extend or transition to an open-ended position

**START DATE:** Negotiable, available immediately

**PENSION:** Local Government Superannuation Scheme

**ANNUAL LEAVE:** 31 days + 14 days public holidays

**RESPONSIBLE TO:** Dr Benjamin Williamson

**CLOSING DATE:** 3 February 2023

The Environmental Research Institute (ERI) is part of UHI North Highland, Thurso, one of the academic partners of UHI. Our mission is to 'provide dynamic leadership in research, innovation and education that advances understanding and informs management of our natural environment'.

Located in Thurso, on the north coast of Scotland, the ERI is close to many outstanding marine energy resources with excellent proximity to marine energy sites for research and innovation opportunities. Sustainable use of these wind, wave and tidal stream resources is key to achieving ambitious Scottish and international renewable energy targets.

The ERI's 'Energy' research team comprises students and researchers, working across engineering, ecology, oceanography, marine sensing and robotics, and collaborating with an array of regional, national and international partners.

We are now seeking to recruit a Research Fellow: Marine Sensing to join our multi-disciplinary team.



# Research Fellow: Marine Sensing

## Job Description

We are recruiting for a Research Fellow to develop activities in marine sensing, including the design, development and deployment of novel multi-instrument sensor platforms. The researcher will benefit from the purpose-built 'Centre for Energy and the Environment' in Thurso, comprising modern offices, instrumentation and electronics laboratories, workshops, and access to the Pentland Firth via ERI's research boat 'Aurora'.

The candidate will support development, upgrade and deployment of autonomous marine sensor platforms to investigate the environmental effects of large-scale offshore and marine renewable energy.

This will include:

- Design, test and calibration of autonomous marine sensor platforms and surveys
- Sensor and instrumentation selection, working with the multi-disciplinary team
- Electrical and electronic design, including instrument control, communications, power supply, redundancy, edge computing
- Develop & implement software for interfacing sensors and processing data in real time, enabling test and demonstration, before field deployments
- Contribute to development of algorithms for data processing and analysis.



Previous multi-sensor platforms include [FLOWBEC-4D](#) with various [applications](#). Recent technological advances now provide an opportunity to develop next-generation sensor platforms, ultimately informing future distributed, scalable and coordinated ocean sensing.

# Key Duties

## Research:

- Make an effective and innovative contribution to the development of multi- and inter-disciplinary environmental research, exploiting knowledge exchange and commercial opportunities.
- Generate internationally recognised outputs of originality and scientific insight.
- Contribute to income generation at the ERI through grant capture, commercial activity or knowledge exchange activity in line with strategic objectives.



## Management:

- Provide effective and expert supervision of research students, and line management of staff (where required).
- Contribute to development and implementation of ERI, UHI NH and UHI policies & strategies.
- Provide effective budget management for specific projects or areas of research.



## Networking and engagement:

- Develop an effective and responsive network of academic and research organisations and where applicable, commercial, stakeholder, business or public services organisations.
- Build new collaborations and partnerships in response to emerging challenges or opportunities.
- Take on an ambassadorial role using available opportunities and contribute to public engagement and outreach activities.



## Teaching:

- Contribute to curriculum development and teaching / training as opportunity permits.

Other duties temporarily or on a continuing basis, as may reasonably be required, commensurate with the grade.



# Person specification

## Required

Applicants should have a PhD or equivalent experience. A background in Electronic Engineering, Oceanography, Ocean Technology, Physics or similar discipline is desirable.

Research interests in some of the following areas are an advantage:

- Sensing and sensor integration, ideally marine sensing e.g., hydroacoustics, oceanography, hydrodynamics, imaging sonar, fisheries acoustics
- Software/hardware interfaces, parsing and processing data streams (e.g., Ethernet, proprietary file formats, common databases), communication networks
- Marine instrumentation e.g., hydroacoustics, oceanography, hydrodynamics
- Novel sensor platforms, robotics (ASV/USV, drones)

Multi-disciplinary experience, knowledge of programming languages such as MATLAB or Python, and a full driving license are desirable. Experience preparing equipment for marine surveys is a benefit.

Experience can be exemplified by:

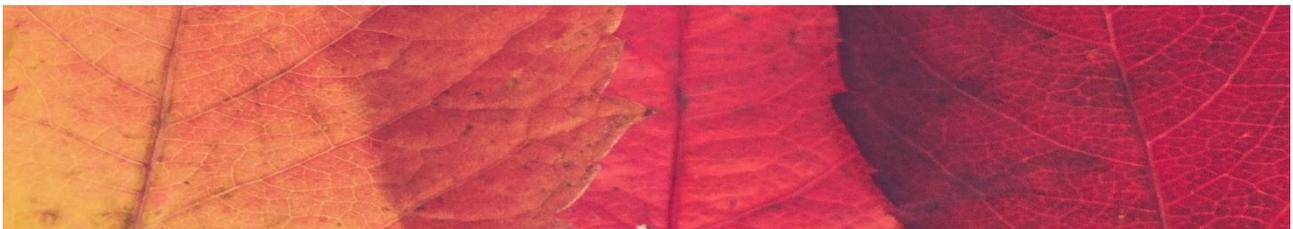
- Research outputs (papers, presentations, etc.)
- Research grants and/or knowledge exchange and innovation activity
- Contributing to postgraduate supervision
- Commercial or consultancy activity

Applicants should have:

- Strong IT skills, including use of Microsoft Office suite
- A willingness to work flexibly across different area and disciplines
- Effective communication skills and comfortable interacting with stakeholders so must be self-disciplined, well organised and able to present themselves in a professional manner with ability to prioritise a busy and varied workload

## Desirable:

- Experience of academic teaching
- Experience of instigating new collaborations or developing partnerships
- Experience working on or managing collaborative, multi-institutional projects
- A relevant professional qualification or membership
- An ability to think creatively, and to advance innovative ideas
- Experience of commercial or consultancy practice
- Experience of presenting to stakeholders



# About the area

## Caithness & Sutherland

The North Highlands is home to Scotland's most famous drive - the North Coast 500, and to one of our most famous destinations - John O'Groats. It is no surprise that when people discover Caithness and Sutherland they want to stay.



The landscape is breath-taking, featuring iconic mountains and flat rolling moorlands. High tech companies sit side-by-side with vibrant, innovative SMEs. The area is also home to Scotland's portal to the final frontier. The A'Mhoine Peninsula will become the UK's first space port, from where rockets carrying satellites will be launched into space in the near future.



Back on earth, the Beatrice offshore wind project, based in Wick, is a leading example of development in the green energy sector, with the recent ScotWind plans announced around the coast of Scotland. Decommissioning of the former nuclear power plant at Dounreay has seeded many supply chain opportunities in the region. Rolls Royce, Subsea 7 and BT are among the global companies investing in employment in the far north of Scotland.



With the world famous Royal Dornoch golf course and an internationally recognised surf spot around the Thurso East reef, the area is a draw for outdoor sports enthusiasts. With beautiful beaches and bays, wildlife, high hills and big skies, the region of Caithness and Sutherland has much to offer.

# Thurso



Thurso (population c. 8000) is a long-established town with origins dating back to Viking times when it was an important Norse settlement, the major gateway to mainland Scotland (its name comes from the Norse, from *Thorsa* meaning *Thor's River*). Thurso later grew to become a market town and was noted for its trade with Scandinavian and Baltic ports from as early as the 14<sup>th</sup> century.



Situated on the Pentland Firth in the beautiful, sheltered Thurso Bay it is the most northerly town on the Scottish mainland. The bay sweeps from Holborn Head in the west to Dunnet Head in the east. Thurso has a fine harbour, beach and looks out over the Firth to the Orkney Island of Hoy and the famous towering Old Man of Hoy (a 449-foot sea stack on Hoy). Just west of Thurso lies Scrabster, the main ferry port for Orkney.

For a town of its size, Thurso has numerous amenities including:

- A vibrant local shopping centre
- Three primary schools and one secondary school, and a college of further and higher education (UHI North Highland)
- Several hotels, lively bars and restaurants
- Leisure facilities including gyms and a swimming pool, tennis & squash courts, yoga studio, and a cinema
- Clubs and societies including dancing, drama, walking, kayaking, surfing, sailing, music, community greenhouse, etc.
- Railway, bus, ferry connections and Wick airport within 30 minutes

## Further information

[Things to do | Venture North \(venture-north.co.uk\)](http://venture-north.co.uk)

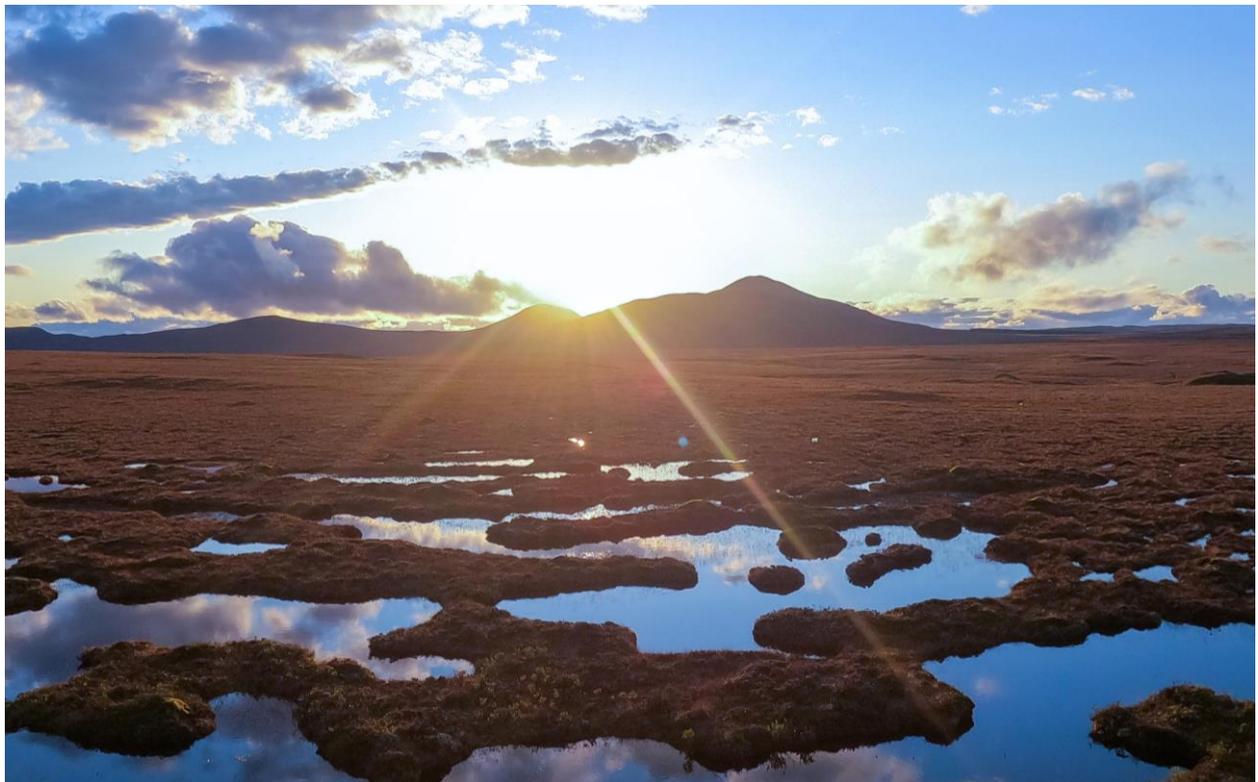
[Things to Do & Tourist Guide, North Caithness | Venture North \(venture-north.co.uk\)](http://venture-north.co.uk)

[Venture North Discovery: Summer in Caithness & Sutherland - YouTube](https://www.youtube.com/watch?v=...)

[Venture North to Caithness & Sutherland - YouTube](https://www.youtube.com/watch?v=...)

# Key Terms and Conditions of Employment

Hours of Work	A full-time working week is one of 35 hours. This may include evening and weekend work, where required.
Holidays	A full year's holiday entitlement is 31 days. In addition, there are 14 days public holidays of which 10 are taken at Christmas and 2 at Easter, the remaining 2 are treated as floating.
Salary	To be negotiated within advertised range, i.e., £31,066 - £33,641 (Postdoctoral Researcher) or £36,467 - £39,420 (Research Fellow)
Location	The position is planned to be based at the ERI in Thurso although you may be required to work from other sites as appropriate to the duties. There may be the possibility of flexible remote-working arrangements – please indicate this in your application if it is of interest.
Pension	You will be contractually enrolled into the Local Government Superannuation Scheme. Further details are available on joining.
References / PVG Scheme	For external candidates, appointment will be subject to references and admission to the PVG Scheme.



# Further information

The following websites may be useful in providing further information.

**The University of the Highlands and Islands:** <http://www.uhi.ac.uk/>

**UHI North Highland:** <http://www.northhighland.uhi.ac.uk/>

**The Environmental Research Institute (ERI):** <http://www.eri.ac.uk/>

The ERI's Strategic Plan 2021/22 is provided as an attached document to this pack. Key elements of the strategy are presented below

For further information on this position, please contact Dr Benjamin Williamson, leader of ERI's 'Energy' research group: [benjamin.williamson@uhi.ac.uk](mailto:benjamin.williamson@uhi.ac.uk)

## Completing the Application Form

Please read the application form thoroughly and complete it electronically (preferred) or in black ink. Please ensure that you complete all sections.

Where answers require additional detail, this should be provided on a continuation sheet and attached to the form.

**A current CV and covering letter should also be provided in addition to the application form.**

The information that you provide in your application form & other supporting information is the only information we will use in deciding whether or not you will be short listed for interview. Your application will be treated in the strictest confidence.

## References

Please give the name, address, telephone number and email address (if known) of two referees, including your existing or last employer, to whom reference may be made in support of your application concerning your professional ability and performance at work. References will only be taken up for short-listed candidates.

Please ensure your referees are able to respond promptly as no appointment will be made without receipt of satisfactory references.

Please note that any offer of employment will be conditional upon receipt of satisfactory references from your current/last employer or academic institution, unless advised otherwise.

# Submitting your application

Completed applications must be returned by the closing date indicated Applications (preferably by e-mail) should be sent to [NHCHR@uhi.ac.uk](mailto:NHCHR@uhi.ac.uk)

Or: Human Resources, North Highland College-UHI, Ormlie Road, Thurso, Caithness, Scotland KW14 7EE.

We will acknowledge receipt of completed applications by e-mail. Written acknowledgement of completed applications will only be provided where requested and where a stamped addressed envelope is enclosed with your application for this purpose.

We will contact you concerning your application once shortlisting has been completed.

## Key dates

The closing date for receipt of applications is 3 February 2023.

Interviews are planned for 15 February 2023 onwards.

Initial interviews may be conducted online.

Starting date for successful candidates: Starting date may be negotiated – the position is available immediately (subject to receipt of satisfactory references and securing PVG Scheme membership via Disclosure Scotland).

# The Environmental Research Institute



The Environmental Research Institute (ERI) is based in Thurso, Scotland and is part of the University of the Highlands and Islands, North Highlands. Since 1999 our multidisciplinary team has sought to transcend scientific boundaries to undertake and promote high-calibre research, innovation, and education in the environmental sciences that 'makes a difference'. We aspire to excellence in all we do.

We seek to advance scientific understanding of contemporary environmental issues using our proximity to outstanding natural resources combined with state-of-the-art facilities. We advance our goals through development of networks with strong, strategic partnerships and

collaborations with academic, commercial and stakeholder organisations within regional, national and international contexts.

We aim to ensure that our work has tangible value to society, helping address new societal, economic and policy challenges related to use and management of the natural environment and its resources, and responding to changes in the environmental, organisational, financial and political landscapes. In doing so, we seek to contribute to the University mission of having a transformational impact on the region's economy, people and communities (strategic-plan-2021-25.pdfuhi.ac.uk).

## Our Vision:

A natural environment that is healthy, sustainable and valued by all

## Our Mission:

To provide dynamic leadership in research, innovation and education that advances understanding and informs management of our natural environment

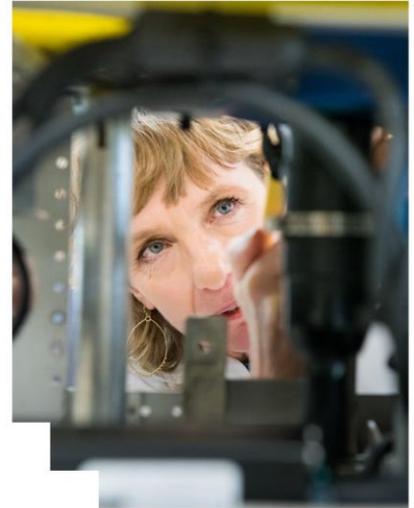


# Our Strategic Priorities

As part of UHI North Highland, our strategic priorities are:

- + **Research:** To develop a vibrant culture of research that is recognised for its regional impact & international excellence
- + **Learning and Teaching:** To provide students with outstanding and relevant learning opportunities
- + **Partnerships:** To develop our partnerships to maximise our impact on regional redevelopment

And our cross-cutting themes are 'Sustainability' and 'Net zero' and Enterprise. The UHI North Highland Strategic plan may be found here: [NHC-UHI-Strategic-Plan-2021-2025.pdf](#)



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## Our Values

We value research, learning and teaching and partnership activity that is:

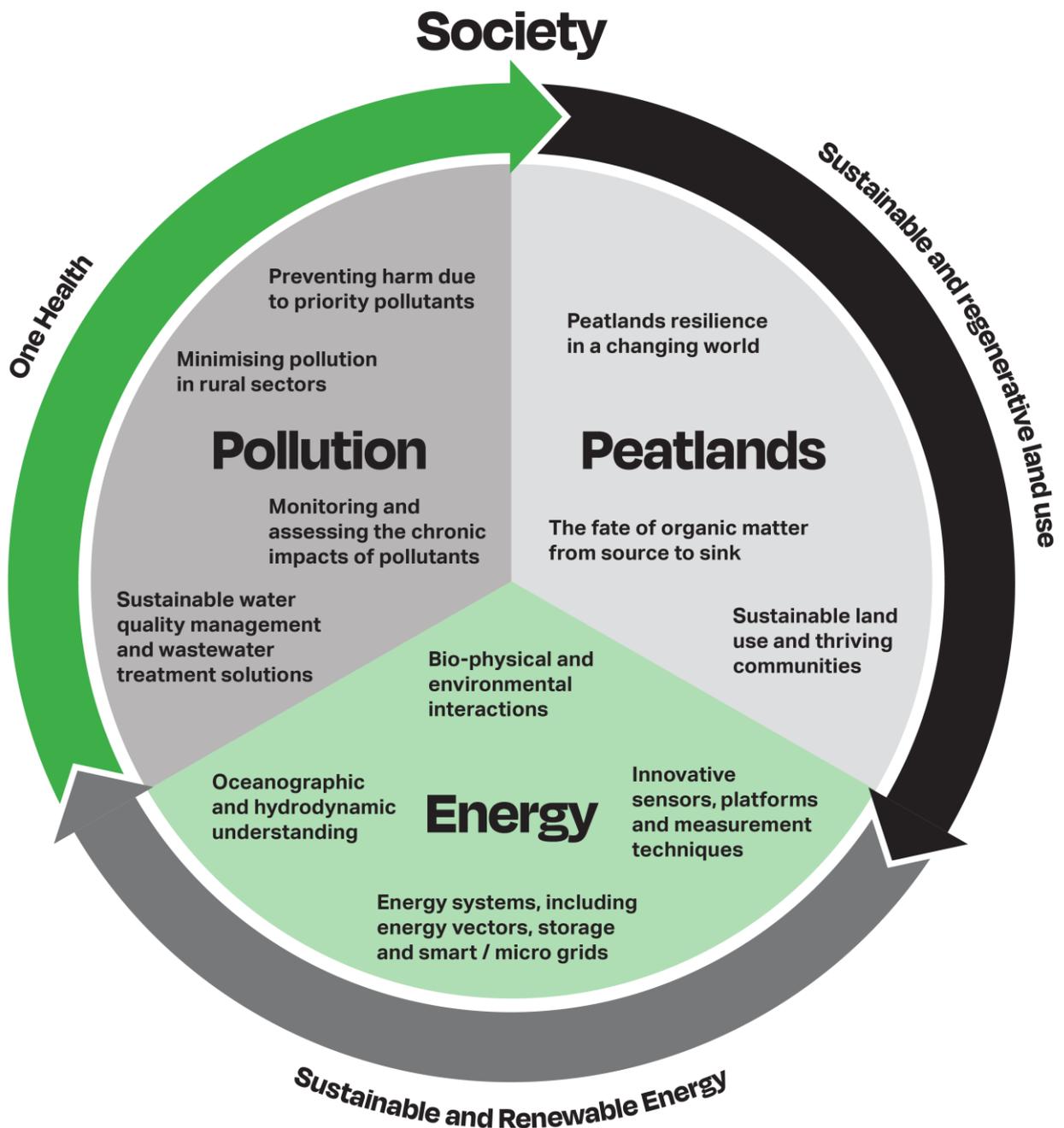
- + **Aspirational** - characterised by excellence at all levels
- + **Relevant** - addressing contemporary environmental issues and ensure that policy, management and legislative decision making is informed by robust, high-quality science
- + **Recognised** – regionally, nationally, and internationally for quality and reliability
- + **Distinctive** – capitalising on the scientific strengths of the ERI and its partners and on the outstanding and often unique environmental assets of the region
- + **Innovative** – bring new knowledge and creative thinking into practice
- + **Inter- and multi-interdisciplinary** – an environment devoid of disciplinary boundaries and well adapted to addressing issues and solving problems
- + **Collaborative** – forming effective working relationships regionally, nationally and internationally with key partners from the academic, business, stakeholder and educational sectors



# Our Themes

ERI activity is focused on the following issue-driven, interdisciplinary themes:

- + **Energy:** Renewable energy and the environment
- + **Pollution:** Understanding environmental contamination and developing sustainable solutions
- + **Peatlands:** Linking carbon, water, biodiversity and climate
- + **Society:** Connecting environment, economy and society



# Energy

## Renewable energy and the environment

The promise of renewable energy is huge, from reaching emissions targets to contributing to blue growth. Along with this promise comes the pressing need to understand how energy harnessed from wind, waves and tides will impact the environment. Sustainable use of these resources will play a key role in achieving the Scottish Government's ambitious renewable energy and carbon emission targets. Our philosophy of "research where the resource is" means ERI is ideally situated, yet our research has international reach and impact. We actively seek and develop effective collaborations and partnerships, within regional, national and international settings.

Our team integrates in-situ measurement, environmental survey, experimental, modelling and remote-sensing approaches. These provide new insights relevant to renewable energy, but

also ecosystem functioning and anthropogenic impacts more generally within the fields of marine biology, behavioural ecology and oceanography.

We promote understanding of closely coupled social and economic issues, with a focus on rural and island communities. We are proud to contribute to the prospects of northern Scotland, supporting sustainable industries that can have a transformational impact on the prospects of our region, its economy, its people and its communities. We continue to incorporate new environmental understanding into integrated sustainability assessments and models at community, local and regional scales. We also explore the interdependencies of adjacent sectors such as nuclear energy, oil and gas, and aquaculture, including leading Energy Knowledge Exchange and Innovation activities across UHI.

## Our priorities are:

**Renewable energy and the environment** – investigating renewable energy ecological and bio-physical interactions to inform pre- and post-consent monitoring, cumulative impact and strategic environmental assessment. This is underpinned by increased understanding of marine vertebrate ecology using techniques such as telemetry/bio-logging, remote sensing and observation to investigate ecosystem effects, understanding of mechanisms, predator-prey interactions and environmental drivers of behaviour and biodiversity.

**Oceanographic and hydrodynamic understanding** – in-situ, remote-sensing and modelling approaches across scales (temporally and spatially) to inform renewable energy resource measurement, knowledge of metocean conditions, flow-structure interactions (e.g., wakes) and ecological drivers. This includes wave-current interactions, and advanced understanding of turbulent flow, with implications for renewable energy device design, placement and operation.

**Innovative sensors, platforms and measurement techniques** – development and application of novel cross-cutting approaches and technologies to gain new environmental insights including drones, hydroacoustics, sensor fusion, computer vision, machine learning and techniques for exploiting large datasets. Innovative engineering solutions underpin our environmental science priorities and assist forthcoming science requirements by enabling cutting-edge environmental research.

**Energy systems**, including energy vectors, storage and smart or micro grids – supporting optimal use of intermittent renewables into grid and off-grid applications, including remote / island communities and developing countries, for a socially and economically sustainable energy transition, and aspects of social licence and community engagement.

