

# NERC Holyrood Reception Briefing - Supporting Material

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## Background to our event

The NERC reception aims to showcase NERC brand messages to Scottish parliamentary audiences and NERC advocates through a celebration of NERC science and people with a Scottish connection.

The reception objectives are to:

- Showcase NERC brand and messages to Scottish parliamentary audiences and NERC advocates through a celebration of NERC science and people with a Scottish connection, in support of our broader external affairs aims.
- Demonstrate how NERC:
  - Helps find solutions to the problems facing people, society and the economy;
  - Works with Scottish parliament and policy-makers to ensure our evidence informs policy;
  - Engages the UK public with environmental science evidence.
- Raise awareness, support and enthusiasm for NERC UnEarthed showcase with attendees through an element of fun!
- Build closer relationships with a community of NERC advocates in Scotland from research, partner and parliamentary stakeholder groups.

We will be bringing NERC research, researchers and partners into the Scottish Parliament to demonstrate how NERC helps find solutions to the problems facing people, society and the economy. Our themes for the reception focus on solutions such as improving air quality, safeguarding natural resources and increasing resilience of UK infrastructure. We want to demonstrate how we are working: with a parliamentary audience to ensure knowledge on current topics is at their fingertips; with industry and policy to innovate and provide solutions and; with the public to engage them in our work.



Our sponsor for this event is Graeme Dey MSP. Graeme Dey is a Scottish National Party politician for Angus South constituency. He was elected to the Scottish Parliament in 2011. He is a member of the Environment, Climate Change and Land Reform Committee, taking high interest in Environment, Land Reform, Water quality, Climate change, National parks, Crown estate and Marine planning.

Our vision for the look and feel of the event is to have four themed areas (energy infrastructure, natural resources, international policy, air quality) for which we have invited 4-5 ‘case people’ to bring to life NERC’s contribution. The focus will be on 1:1 conversations between attendees and creating as many conversations as possible where partners and researchers advocate for NERC (alongside their own messages) to our parliamentarian ‘audience’ for this event. We have not produced briefings for our audience, instead our focus is on face to face conversations between attendees and advocacy instead.

## The Cast

Several groups of people will be attending with distinct roles that we would like to make you aware of:

Group	Purpose	People
The NERC event team:	Will keep everything running smoothly on the night. These are the people to come to if you have a logistical issue.	Sarah Miles (event lead) Hannah Collins Mary Goodchild Lyndsey Jones
NERC hosts	Represent NERC. Act as hosts and make sure delegates feel welcome and involved. Facilitate networking.	Sir Anthony Cleaver (NERC Chair) Duncan Wingham (NERC CEO) Alison Robinson Tim Wheeler Ned Garnett Caroline Culshaw Sasha Leigh Robyn Thomas
NERC Council and Centre Directors	Represent and advocate for NERC. Facilitate networking.	Sir Anthony Cleaver Lesley Yellowlees Mark Bailey (CEH) Angela Hatton (NOC) Rosemary Hails (CEH) John Ludden (BGS) John Remedios (NCEO) David Vaughan (BAS) Ed Hill (NOC) TBC Stephen Mobbs (NCAS) TBC
Science Board members	Represent and advocate for NERC. Facilitate networking.	John Brodholt Lora Fleming Rosemary Hails Angela Hatton Tamsin Mather Richard Pancost



		<p>Andrew Shepherd Rowan Sutton David Thomas David Vaughan Susan Waldron</p>
Speakers	<p>Participate in a short panel discussion on “Understanding our changing planet is fundamental to our future wellbeing and economic prosperity”.</p>	<p>Graeme Dey MSP Helen Bonsor Lesley Yellowlees Sir Anthony Cleaver</p>
Case People	<p>Represent and bring to life a case study in one of four themed areas, using objects as conversation starters, to engage attendees first hand. Case people include NERC KE Fellows, PhD students on NERC-SPICE internships, centre scientists, researchers and NERC partners who are working with us on particular cases. Case people have been asked to mingle in the area around the thematic banner.</p>	<p>(see list in . This interest continues, with the publication of the government’s Air quality plan for nitrogen dioxide (NO<sub>2</sub>) in UK (2017) in July 2017. Through this theme, we want to demonstrate how NERC research is contributing to informing decision making regarding air quality, and how the cutting-edge knowledge that we commission is part of the solution.</p> <p><b>International Policy</b> <i>Narrative: The best environmental science in the world happens in the UK. The best of that is funded by NERC. For environmental science, NERC is the best of the best.</i> <i>International policy decisions are based on NERC’s world-leading scientific evidence because we have a long history of identifying the root causes of challenges that do not obey international borders.</i> This theme opens discussion around global Britain, partnership, collaboration and demonstrating UK leadership within a Global context.</p> <p>Our claim that NERC Invests in the best of the best:</p> <ul style="list-style-type: none"> <li>• UK environmental science leads the world on field-weighted citation impact, which is a measure of research quality.</li> <li>• UK environmental science leads UK disciplines on field-weighted citation impact.</li> <li>• UK environmental scientists produce more top-ranked publications per pound invested than any comparable nation.</li> <li>• NERC funds the best of UK environmental science.</li> </ul> <p>See our 2016 Impact Report for more (<a href="http://www.nerc.ac.uk/about/perform/reporting/reports/impactreport2016/">http://www.nerc.ac.uk/about/perform/reporting/reports/impactreport2016/</a>) Case people section)</p>



## Our Parliamentary Audience

Our primary audiences for this event are the Scottish parliamentarians and high-level government officials attending. A full attendee list (current on 01/11) is included in the annexes, and background on some key members of the 'audience' that may be of interest to you are also included to help you select who you may wish to speak to on the evening, and what about.

Graeme Dey's office have invited all Members of Scottish Parliament, and we fully expect them to filter in and out of the room as they please. We have received personal acceptances from four MSPs and five managers/leads within Scottish Government although from experience, we are likely to get more MSP 'passing traffic' on the night as they visit several of the events being held that evening.

Other events on the evening include:

- Social enterprise
- Parliament prayer group

## Speeches

The panel of speakers will be giving their views on “**Environmental science evidence and public policy**”, highlighting the relevance of science to inform key policy and public debates.

The panel will be led by our event sponsor Graeme Dey MSP, and consists of: **Graeme Dey MSP, Helen Bonsor (NERC KE Fellow), Lesley Yellowlees (NERC Council) and Sir Anthony Cleaver (NERC Chair).**



## Key NERC messages and thematic focus

### NERC branding and messaging

**We are the driving force of investment in environmental science.**

**Because understanding our changing planet is fundamental to our future wellbeing and economic prosperity.**

**We advance the frontier of environmental science, by commissioning new research, infrastructure and training that delivers valuable scientific breakthroughs.**

### Specifically for our government and parliament audiences:

- NERC's world-leading research is helping to solve some of the biggest environmental issues facing us, such as air pollution, flooding and bee health.
- NERC investment creates new jobs and drives economic growth, increases resilience, and promotes health and wellbeing.
- NERC science has global reach and impact in major economies, such as Europe, North America and Asia.

### Highlight facts:

Each year NERC invests £330m in cutting-edge research, training and innovation

NERC science has global reach and impact

NERC works in partnership with business, government and civil society.

NERC provides international leadership, influence and creates market opportunities for the UK

NERC environmental science is the most referenced globally, with almost double the number of citations as the global average

Together we deliver new ways of living, doing business, escaping poverty and growing economies



## Reception themes

### Infrastructure

*Narrative: NERC keeps the lights on and the UK moving, making sure our infrastructure and new energy technologies are safe and resilient.*

*Our world-leading innovations and expertise provide intelligence on future climate risks and design standards, minimising the risks and maximising the gains of clean energy sources and a more productive transport infrastructure.*

The energy and infrastructure sectors continue to be a significant focus for our parliamentary audiences, from the challenges posed by extreme weather to community infrastructure, right through to questions regarding energy mix. This theme speaks to NERC’s contribution to infrastructure for energy, transport and other sectors. Through this theme, we want to demonstrate how NERC research, capability, innovation and people inform decisions taken in these sectors, and provide knowledge that leads to more robust, resilient and affordable infrastructures.

### Natural Resources

*Narrative: NERC science boosts economic growth and wellbeing through more productive ways of working and smart regulation.*

*Every business and every consumer benefits from natural resources while incurring the costs of environmental hazards and pollution. NERC helps safely and securely harvest resources so we can protect and benefit from our environment.*

This theme speaks to a breadth of NERC research areas from sustainable food through to hydrology. This theme speaks to the role of NERC research post-Brexit and NERC’s contribution to informing policy, regulation and other decision-making regarding natural resources.

### Air Quality

*Narrative: NERC finds air quality solutions so we can clean our air for a healthier UK.*

*Achieving clean growth is a challenge for the whole economy, across all sectors of industry and the environment. NERC science identifies the sources of all types of bad air and the solutions, showing the way to a healthier population.*

Air quality is a topic that has captured the interest of parliamentary audiences over the last few years. This interest continues, with the publication of the government’s Air quality plan for nitrogen dioxide (NO<sub>2</sub>) in UK (2017) in July 2017. Through this theme, we want to demonstrate how NERC research is contributing to informing decision making regarding air quality, and how the cutting-edge knowledge that we commission is part of the solution.

### International Policy

*Narrative: The best environmental science in the world happens in the UK. The best of that is funded by NERC. For environmental science, NERC is the best of the best.*

*International policy decisions are based on NERC’s world-leading scientific evidence because we have a long history of identifying the root causes of challenges that do not obey international borders.*

This theme opens discussion around global Britain, partnership, collaboration and demonstrating UK leadership within a Global context.

Our claim that NERC Invests in the best of the best:



- UK environmental science leads the world on field-weighted citation impact, which is a measure of research quality.
- UK environmental science leads UK disciplines on field-weighted citation impact.
- UK environmental scientists produce more top-ranked publications per pound invested than any comparable nation.
- NERC funds the best of UK environmental science.

See our 2016 Impact Report for more

(<http://www.nerc.ac.uk/about/perform/reporting/reports/impactreport2016/>)



## Case people

In order to bring our themes to life and provide some specific examples for each, we have invited 'case people' to attend and tell a story of a particular piece of work that they have engaged with for their theme as part of the networking. There will be 16 exhibits with over 20 NERC scientists attending the event to 'bring to life' NERC science and its relevance. They will be bringing objects/data relating to their studies along with them, to act as conversation starters and to get MSPs and stakeholders engaged with our science, seeing it first-hand. These include NERC KE Fellows, PhD students on NERC-SPICE internships, centre scientists, researchers and NERC partners who are working with us on particular cases, amongst others. A z-card with our themes and 'case people' with headlines and contacts for follow up will be given to attendees as a light touch programme and memento. The 'case people' and their 'headlines' are listed in this section:

**AIR QUALITY:** NERC finds air quality solutions so we can clean our air for a healthier UK.

- **Dr Marsailidh Twigg** (CEH), and **Dr Sue Loughlin** (BGS)  
Getting real-time information about air pollution that comes into Edinburgh from other cities, agriculture or natural events
- **Dr Stefan Reis**, (CEH), and **Dr Colin Simpson** (University of Edinburgh, Asthma Research Centre)  
Forecasting air pollution to give health services and people with asthma warning of potentially dangerous pollution episodes
- **Professor Mark Sutton and Dr Clare Howard**, Centre for Ecology and Hydrology  
Leading a global science-policy initiative that's developing the supporting science to address nitrogen pollution across sectors
- **James Summers**, UK Association for Science and Discovery Centres  
Running a UK wide public engagement programme called Operation Earth that will engage families and reach over 100,000 people. Launching 2018.

**NATURAL RESOURCES:** NERC helps safely and securely harvest natural resources so we can protect and benefit from our environment.

- **Professor Alan MacDonald**, British Geological Survey  
Discovered that groundwater flooding was prevalent in Scotland and applied this science to help design a flood alleviation scheme protecting 650 homes and 65 businesses in Forres.
- **Dr Jonathan Hillier**, University of Aberdeen  
Enabled businesses including Unilever, PepsiCo, Tesco, and Marks & Spencer to reduce greenhouse gas emissions from all major crops in their supply chains in over 60 countries.
- **Helen Bonsor**, (BGS) and **Cathy Johnston** (Glasgow City Council)  
Delivering 50,000 new affordable homes by 2021 with new planning policies using NERC research.
- **Nick Reynard**, Centre for Ecology and Hydrology  
A novel rainfall flood risk forecast system trialled for the Glasgow 2014 Commonwealth Games. One of a range of tools helping to identify potential natural hazards across Scotland.
- **Dr Callum Whyte and David Guthrie**, Scottish Association for Marine Science (SAMS)  
Supporting Scottish Government objectives to sustainably increase aquaculture production through a suite of simulation and monitoring tools, alerts and bulletins.

**INFRASTRUCTURE:** NERC keeps the UK moving, making sure our infrastructure and new energy technologies are safe and resilient.





- **Dr Jonathan Chambers**, *British Geological Survey*, (NERC KE Fellow)  
Created a tool to provide early warnings of landslides, which are likely to become increasingly problematic in Scotland.
- **Dr Carol Cotterill**, *British Geological Survey*  
Cleaner power for up to 4 million homes thanks to geological experts who mapped and modelled the 2.4GW Dogger Bank offshore wind farm, smoothing the site's development.
- **Dr Francis Daunt**, *Centre for Ecology and Hydrology*  
Understanding the effect of offshore wind on seabirds.
- **Dr Margaret Stewart and Dr Dave McCarthy**, *British Geological Survey*  
Supporting responsible hydrocarbon extraction with scientific evidence to aid responsible decision making.

**INTERNATIONAL POLICY:** International policy decisions are based on NERC's world-leading scientific evidence.

- **Damon Davies**, *University of Edinburgh*, (SPICE Intern)  
Transferring knowledge of glaciers and climate change to SPICE research through the Research Councils UK Policy Internship scheme.
- **Heather Stewart**, *British Geological Survey*  
Understanding what cold-water corals can tell us about climate change and how it affects them. As well as this climate record, cold-water corals are an important nursery for fish.
- **Professor Stuart Cunningham, Dr Loic Houpert and Charlotte Waugh**, *Scottish Association for Marine Science (SAMS)*  
NERC-funded ocean gliders 'flown' from Scotland have covered more than 30,000 miles of open ocean, significantly contributing to our understanding of climate change.




## Parliamentarians and senior government officials attending

Graeme Dey's office have invited all Members of Scottish Parliament, and we fully expect them to filter in and out of the room as they please. There will be four other events on the same evening as ours, and MSPs are welcome to pass through all events at their leisure. We will have several big attractions to pull passing traffic into the NERC reception. Other events include: Social Enterprise event, Parliament prayer group and an event based around a particular project within Parliament.

The [Environment, Climate Change and Land Reform Committee](#) is one of great interest to NERC. This committee takes a high interest in Environment, Land Reform, Water quality, Climate change, National parks, Crown estate and Marine planning. Members of this committee are listed below.

MSPs that have sent personal acceptance of their attendance include Graeme Dey, Angus MacDonald, Andy Wightman, Stewart Stephenson and Ruth Davidson. There details are also below.

<p><b>Name: Graeme Dey MSP, Angus South (Scottish National Party)</b>  <i>EVENT SPONSOR – looked after by: NERC host - Sir Anthony Cleaver and event team: Hannah Collins</i></p> <p><b>Relevant Parliamentary Roles:</b>            Convener Environment, Climate Change and Land Reform Committee            Substitute Member Public Petitions Committee            Deputy Convener Cross-Party Group in the Scottish Parliament on Rural Policy            Previously Depute Convener of the Rural Affairs, Climate Change and Environment Committee in last Parliament (2011-2016)</p> <p><b>Interested in:</b> Environment and climate change</p> <p><b>Relevant themes:</b> <a href="#">Natural Resources</a>, <a href="#">Air Quality</a>, <a href="#">International Policy</a></p>	
<p><b>Name: John Scott MSP, Ayr (Scottish Conservative and Unionist Party)</b>  <i>Looked after by Alison Robinson</i></p> <p><b>Relevant Parliamentary Roles:</b>            Deputy Convener Environment, Climate Change and Land Reform Committee            Substitute Member for Rural Economy and Connectivity Committee            Co-Convener Cross-Party Group on Rural Policy</p> <p><b>Interested in:</b> Agriculture and land, property, Water, Energy,</p> <p><b>Relevant themes:</b> <a href="#">Natural Resources</a>, <a href="#">Infrastructure</a></p>	
<p><b>Name: Angus MacDonald MSP, Falkirk East (Scottish National Party)</b>  <i>ATTENDING – looked after by Ned Garnett</i></p> <p><b>Relevant Parliamentary Roles:</b>            Member of Environment, Climate Change and Land Reform Committee            Member of Cross-Party Group on Rural Policy            Constituency has an <a href="#">interest in Fracking</a></p> <p><b>Interested in:</b> Environment, Land</p> <p><b>Relevant themes:</b> <a href="#">Infrastructure</a>, <a href="#">International Policy</a></p>	
<p><b>Name: Claudia Beamish MSP, South Scotland (Scottish Labour)</b>  <i>Looked after by Alison Robinson</i></p> <p><b>Relevant Parliamentary Roles:</b>            Member of Environment, Climate Change and Land Reform Committee            Deputy Convener for Cross-Party Group on Renewable Energy and Energy Efficiency            Spokesperson Environment, Climate Change and Land Reform Committee</p> <p><b>Interested in:</b> Energy, Environment,</p> <p><b>Relevant themes:</b> <a href="#">Infrastructure</a>, <a href="#">Natural Resources</a>, <a href="#">Air Quality</a>,</p>	



<p><b>Name: David Stewart MSP, Highlands and Islands (Scottish Labour)</b> <i>Looked after by Ned Garnett</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee Member of Cross-Party Group on Aviation</p> <p><b>Interested in:</b> Transport, rural development, oil and gas, international development</p> <p><b>Relevant themes:</b> Natural Resources, International Policy, Infrastructure</p>	
<p><b>Name: Donald Cameron MSP, Highlands and Islands (Scottish Conservative and Unionist Party)</b> <i>Looked after by Duncan Wingham</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee</p> <p><b>Interested in:</b> Environment</p> <p><b>Relevant themes:</b> Natural Resources, Air Quality,</p>	
<p><b>Name: Emma Harper MSP, South Scotland (Scottish National Party)</b> <i>Looked after by Duncan Wingham</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee Member of Cross-Party Group on Rural Policy Parliamentary Liaison Officer to the Cabinet Secretary for Rural Economy and Connectivity</p> <p><b>Interested in:</b> Education, Health, Property, Environment</p> <p><b>Relevant themes:</b> Natural Resources, Air Quality</p>	
<p><b>Name: Finlay Carson MSP, Galloway and West Dumfries (Scottish Conservative and Unionist Party)</b> <i>Looked after by Alison Robinson</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee Member of Cross-Party Group on Rural Policy Partner in J and F Caron – former farming business</p> <p><b>Interested in:</b> Farming</p> <p><b>Relevant themes:</b> Infrastructure, Natural Resources</p>	
<p><b>Name: Kate Forbes MSP, Skye, Lochaber and Badenoch (Scottish National Party)</b> <i>Looked after by Alison Robinson</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee Member of Cross-Party Group on international development Member of Cross-Party Group on Renewable Energy and Energy Efficiency Member of Cross-Party Group on Rural Policy</p> <p><b>Interested in:</b> Environment, Energy, rural development</p> <p><b>Relevant themes:</b> Natural Resources, International Policy, Infrastructure</p>	
<p><b>Name: Mark Ruskell MSP, Mid Scotland and Fife (Scottish Green Party)</b> <i>Looked after by Ned Garnett</i></p> <p><b>Relevant Parliamentary Roles:</b> Member of Environment, Climate Change and Land Reform Committee Member of Cross-Party Group on international development Convener of Cross-Party Group on Renewable Energy and Energy Efficiency Co-Convener of Cross-Party Group on Rural Policy</p> <p><b>Interested in:</b> Environment, Energy, Policy, Development</p> <p><b>Relevant themes:</b> Infrastructure, Natural Resources, International Policy</p>	



**Name: Richard Lyle MSP, Uddington and Bellshill (Scottish National Party)**

*Looked after by Tim Wheeler*

**Relevant Parliamentary Roles:**

Member of Environment, Climate Change and Land Reform Committee

**Interested in:** Health, policy, foreign affairs

**Relevant themes:** Infrastructure, International Policy



**Name: Ruth Davidson MSP, Edinburgh Central (Scottish Conservative and Unionist Party)**

*ATTENDING – Looked after by Sir Anthony Cleaver*

**Interested in:** People engagement

**Relevant themes:** International Policy



**Name: Andy Wightman MSP, Lothian (Scottish Green Party)**

*ATTENDING – Looked after by Tim Wheeler*

**Relevant Parliamentary Roles:**

Substitute Member of Environment, Climate Change and Land Reform Committee

Member of Local Government and Communities Committee

Member of Cross-Party Group on Architecture and the built environment

Member of Cross-Party Group on Industrial Communities

Member of Cross-Party Group on Renewable Energy and Energy Efficiency

Member of Cross-Party Group on Social Science

**Interested in:** Natural Environment, Development, Energy, Social Science

**Relevant themes:** Infrastructure, Natural Resources, International Policy



**Name: Stewart Stephenson MSP, Banffshire and Buchan Coast (Scottish National Party)**

*ATTENDING – Looked after by Alison Robinson*

**Relevant Parliamentary Roles:**

Member of Rural Economy and Connectivity Committee

Member of Cross-Party Group on Oil and Gas

Member of Cross-Party Group on Aviation

**Interested in:** Infrastructure, oil and gas, rural policy

**Relevant themes:** Infrastructure, International Policy



**UK Research and Innovation attendees:**

**Sir Mark Walport – TBC, UKRI Chief Executive Designate**

<https://www.ukri.org/about-us/our-people/chief-executive-designate/>



## Background briefing on broader topics

A short briefing on latest NERC topics is included here for your reference:

- UnEarthed – NERC 2017 showcase
- Microplastics
- Environment Evidence for the Future (EEF) Initiative
- Innovative Monitoring Approaches Call (2017)
- Oil & gas decommissioning
- Neonicotinoids and bee health
- UK Geoenergy Observatory
- Hydrojules
- Environmental Evidence for the Future
- Evidence Synthesis Training
- Governance, Responsibility and Ownership of NERC Centres

### UnEarthed: Explore the world at your feet

17-19 November, Dynamic Earth Edinburgh

NERC want to give the Scottish public the chance to see our world-class science up close. During our free interactive showcase - *UnEarthed* - at Dynamic Earth, Edinburgh (17-19 November), families and adults can explore the tools used to make science happen and see the extraordinary work of our scientists. Offering a huge range of engaging exhibits, UnEarthed promises to be both a fun and educational day out for all the family. The showcase will be based around four themes: Air, Land, Energy and Water.

### Microplastics

The UK government has announced that it is to ban plastic microbeads, commonly found in cosmetics and cleaning materials, by the end of 2017. The decision followed recommendations made in a [report by the House of Commons Environmental Audit Committee](#) about the environmental damage caused microbeads, which was underpinned by evidence provided by a number of NERC scientists: Professors Richard Thompson (Plymouth University), Tamara Galloway (University of Exeter) and Frank Kelly (King's College London) feature prominently in the findings of the report alongside a number of others who provided the committee with written evidence.

- NERC scientists have [discovered microplastic in the deep, open ocean](#) (NOC) and recently in areas [as remote as Antarctica](#) (BAS). NERC funded scientists (using NERC's RRS James Cook) [reported the first evidence](#) of deep-sea animals ingesting microplastics in 2016.
- NERC science is improving our understanding and awareness of the effects on sea life and along the food chain, including on humans.
- To date, the majority of studies that have been carried out have been within oceans on marine organisms. [A review of evidence led by CEH](#) has highlighted the need for further research to determine the extent to which microplastics are polluting and harming land-based ecosystems. CEH scientists were the first to publish [evidence of microplastic particles in UK freshwater environments](#).

### Environment Evidence for the Future (EEF) Initiative

The EEF initiative has been formulated to pave the way to addressing environmental challenges and opportunities that present from the UK leaving the European Union, including optimising sustainable



environmental management and ensuring the resilience of our ecosystems and the quality of our water and air. The initiative will define, prioritise and address the medium- to long-term knowledge gaps in the environmental science evidence base. It will identify where NERC investments, the wider environmental research landscape and interdisciplinary knowledge can help address these challenges to inform decisions and pioneer innovative policies and solutions.

A series of four UK-wide policy and practice workshops were held between August and September 2017. The workshop in Scotland revealed distinct and synergistic future environmental policy challenges to those across the rest of the UK (Wales, Northern Ireland and England and Overseas Territories). These perspectives and will be used to formulate a potential future research programme to deliver knowledge, tools and solutions to address these challenges.

### Innovation Monitoring Approaches Call (2017)

Recent NERC call for innovation projects focused on developing [innovative monitoring approaches](#) for the infrastructure, oil & gas and offshore renewable energy sectors. These will be challenge-led, focusing on the application of existing environmental science monitoring capabilities and expertise (e.g. technologies, techniques and tools for measuring and modelling, deployment and interpretation) to provide solutions for industry and policy/regulatory challenges and opportunities.

The call has received huge interest with two large brokerage events with over 180 attendees. Industry and policy organisations involved with these, scoping the call and with developing projects include: ARUP, Atkins, National Grid, EDF Energy, Shell, BP, DONG Energy, Scottish Power Renewables, Vatenfall, BMT Group, Joint Nature Conservation Committee, Natural England, The Carbon Trust and Aquaterra, BEIS and Marine Scotland.

The final proposal assessment panel will be held in November 2017, with successful projects will start in January 2018.

The call is run as a joint NERC Innovation activity across the NERC [Environmental Risks to Infrastructure Programme \(ERIIP\)](#), the [Innovation Programme in Oil & Gas \(IPOG\)](#) and as part of scoping future innovation activity with the renewable energy sector.

### Oil & gas decommissioning

The UK Continental Shelf (UKCS) is one of the world's most mature petroleum provinces with many assets (oil and gas platforms and associated wells, pipelines and other subsea structures) reaching the end of their field lives and likely to require decommissioning over the next 30 years. This task must be conducted in a safe and responsible manner, in one of the harshest maritime environments.

It is estimated that the cost of oil/gas decommissioning will be \$70-80 billion (up to 2040)<sup>[1]</sup>, with UK, Netherlands and Norwegian governments carrying 50-80% of the total through tax relief on expenditure – for example, the UK government's latest estimate of its liabilities is ~£24 billion<sup>[2]</sup>.

Through the [Innovation Programme in Oil & Gas \(IPOG\)](#) (a £5m NERC investment over three to five years, framed around challenges pertinent to industry and policy/regulator 'end-users' of science in this sector where environmental science can have most impact), NERC has invested in a series of decommissioning innovation projects. These range from looking at effects of decommissioning options on Marine Protected Area conservation and ecosystem services, opportunities for

<sup>[1]</sup> Wilby B (2016) Decommissioning Market to Boom from 2016 to 2040. Analysis by Douglas Westwood Associates. Society of Petroleum Engineers (<https://www.spe.org/en/ogf/ogf-article-detail/?art=4>).

<sup>[2]</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/628377/HMRC\\_Annual\\_Report\\_and\\_Accounts\\_2016-17\\_print.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/628377/HMRC_Annual_Report_and_Accounts_2016-17_print.pdf)



automation of monitoring, to looking at comparative assessment options and optimising environment and fishing interests. Project partners involved include: Shell, BP, BEIS, Marine Scotland, Oil & Gas UK, Scottish Fisherman's Federation, Natural England, Gardline Group and BMT Cordah.

### Neonicotinoids and bee health

In June this year, researchers from CEH published results of a large-scale, field-realistic experiment to assess neonicotinoid impacts on honeybees and wild bees across Europe in the journal *Science*. The experiment, undertaken in the UK, Germany and Hungary, exposed three bee species to winter oilseed rape crops treated with seed coatings containing neonicotinoid clothianidin, from Bayer CropScience, or Syngenta's thiamethoxam. Neonicotinoid seed coatings are designed to kill pests, but were effectively banned in the EU in 2013 due to concerns regarding their impact on bee health.

The researchers found that exposure to treated crops reduced overwintering success of honeybee colonies – a key measure of year-to-year viability – in two of the three countries. In Hungary, colony number fell by 24 percent in the following spring. In the UK, honeybee colony survival was generally very low, but lowest where bees fed on clothianidin-treated oilseed rape in the previous year. No harmful effects on overwintering honeybees were found in Germany. Lower reproductive success was linked with increasing levels of neonicotinoid residues in the nests of wild bee species across all three countries.

Bayer CropScience and Syngenta Crop protection co-funded the research to assess the impact of neonicotinoids on honeybees, and NERC funded complementary research to assess the impact on wild bees. The experiment, including design, monitoring and analysis, were scrutinised by an independent scientific advisory committee, chaired by Professor Bill Sutherland of Cambridge University.

### UK Geoenergy Observatory

The UK Geoenergy Observatory project will establish new centres for research into the subsurface environment. The knowledge they generate will contribute to the responsible development of new low-carbon energy technologies both in the UK and internationally. New information will be gathered from the two research sites, the Cheshire Energy Research Field Site and the Glasgow Energy Research Field Site. Together they will underpin the development of energy technologies and advance our understanding of the underground environment - one that modern society uses extensively for water, pipelines, tunnels, building materials, landfill, drainage and more.

The site in the Clyde Gateway area in the east end of Glasgow, will be the focus of geothermal energy research, and was unveiled in the city on 5 September 2017. The site will be known as the Glasgow Geothermal Energy Research Site. The aim is to explore the potential of geothermal energy for the benefit of local communities, as well as offering the opportunity for other areas of innovation and research into the subsurface. The project aims to create an opportunity for research in relation to the geothermal energy potential of the warm waters in the large expanse of disused coalmines under Glasgow. Addressing questions such as: What is the temperature underground? How does water flow under Clyde Gateway? What is the chemistry of the water? And what types of rocks are there?

Any questions on this project during the reception should be directed to John Ludden, Alison Robinson, Tim Wheeler or Julia Maddock.



## Hydro-JULES

NERC have announced a major five-year National Capability investment to develop a new generation of terrestrial hydrological models linked to, and in collaboration with, the Joint UK Land Environment Simulator (JULES) model. JULES is a community land surface model that is used both as a standalone model and as the land surface component in the Met Office Unified Model. It is considered the cutting edge of international land surface modelling due to continual science development and improved accessibility.

The JULES model includes terrestrial earth system components such as dynamic vegetation, carbon and nitrogen cycling as well as representations of the land-atmosphere interactions of water and energy.

The Hydro-JULES research programme will begin in April 2018 and is supported by NERC National Capability funding to CEH, BGS and NCAS. A primary objective will be to generate a complete model of the terrestrial water cycle in a fully consistent way. Through novel systems research into the flow of water, both vertically and laterally advances in land surface-boundary layer science will be made. This project will be in collaboration with national and international organisations, Universities and institutes working on the development of the JULES model.

Questions regarding Hydro-JULES can be directed to Mark Bailey (CEH Director), John Ludden (BGS) and Stephen Mobbs (NCAS) during the reception.

## Environmental Evidence for the Future

This new programme of activity will pave the way to addressing crucial challenges and exciting opportunities that present from the UK leaving the European Union, including optimising sustainable environmental management and ensuring the resilience of our ecosystems and the quality of our water and air.

At a time when focus is overwhelmingly on short-term requirements, this programme will define, prioritise and address the medium- to long-term knowledge gaps in the environmental science evidence base. It will identify where NERC investments, the wider environmental research landscape and interdisciplinary knowledge can help address these challenges to inform decisions and pioneer innovative policies and solutions. It will take a holistic, systemic and outcome-driven approach.

## Evidence Synthesis Training

This month, NERC awarded grants to seven UK research institutes to deliver training to NERC-funded PhD students and early career researchers to help make their science more accessible to non-expert audiences. The £350k investment is part of the Evidence Synthesis Training pilot scheme, which aims to provide a robust mechanism for translating research into evidence to inform decision-making for business, policy, and research. The training supported through this pilot scheme will be developed and delivered in collaboration with a range of partners (including policy-makers) who regularly make use of NERC research outputs to ensure that it meets the needs of our broader community.

## Governance, Responsibility and Ownership of NERC Centres

In October 2017, the Minister of State for Universities, Science, Research & Innovation agreed that plans for CEH and NOC to become independent research institutes (companies limited by guarantee with charitable status) should move into preparation phase. We will now progress all the activities required to demonstrate readiness to transition to independent institutes.

This will include, for instance, creating non-trading companies limited by guarantee, with boards which will then engage with NERC and UK Research & Innovation (UKRI) to agree the terms of the transfer. This milestone allows us to start the detailed planning, which we will share with our





external stakeholders, staff members, third party funders, other partners and suppliers as we progress. 'Readiness to implement' will then be tested in Gateway 4 and the resulting business case submitted for ministerial review and approval in 2018.

As they are presently part of NERC, NOC and CEH will become part of the proposed UKRI when it is created in April 2018 and move from UKRI to their new independent status. Again, we will be in contact with staff, trade unions, third party funders, partners and suppliers prior to the transfer period to explain in more detail how the transfer will take place and what they may need to do.

BGS and NERC are looking at the internal governance arrangements for BGS to give them greater autonomy. The first step has been appointing the first chair of the BGS Board, Sir Keith O'Nions, and discussions will start with him to shape the overall governance. The case for BGS to be independent of NERC is due to be revisited after UKRI is created.

The governance of BAS is unchanged.



## Full list of attendees (as of 01/11/17)

D K	Arvind	University of Edinburgh
Mark	Bailey	CEH
Tim	Bedford	Uni of Strathclyde
Nicholle	Bell	University of Reading
Anne Marte	Bergseng	Sniffer/ClimateXChange
Helen	Bonsor	BGS
Stephen	Breslin	Glasgow Science Centre
John	Brodholt	UCL
Rob	Brooker	James Hutton Institute
Doug	Brown	Scottish Government
Morven	Cameron	Highlands and Islands enterprise
Jonathan	Chambers	BGS
Hannah	Chater	The Royal Society Scotland
Anthony	Cleaver	NERC
Hermione	Cockburn	Dynamic Earth
Hannah	Collins	NERC
Carol	Cotterill	BGS
Moya	Crawford	Marine Alliance for Science and Technology (MAST)
Caroline	Culshaw	NERC
Kenny	Coull	Scottish Fisherman's federation
Stuart	Cunningham	SAMS (Scottish Association for Marine Science)
Francis	Daunt	CEH
Damon	Davies	SPICE
Stuart	Fancey	Scottish Funding Council
Julie	Fitzpatrick	Moredun
Lora	Fleming	University of Exeter
Zoe	Fleming	NCAS
Ned	Garnett	NERC
Anne	Glover	University of Aberdeen
Mary	Goodchild	NERC
David	Guthrie	Scottish Association for Marine Science (SAMS)
Rosemary	Hails	CEH
Ailsa	Hall	SMRU
Angela	Hatton	NOC
Liz	Hodge	Aberdeen Science Centre
Pete	Hollingsworth	Royal Botanic Gardens Edinburgh
Loïc	Houpert	Scottish Association for Marine Science (SAMS)
Mark	Inall	SAGES
Charlie	Jeffery	University of Edinburgh
Mark	James	Scottish Oceans Institute
Cathy	Johnston	Glasgow City Council
Lyndsey	Jones	NERC
Liam	Kelly	Directorate for Environment & Forestry, RESAS
Sasha	Leigh	NERC
Sue	Loughlin	BGS
Jennifer	Loxton	Research Associate, Environmental Research Institute
John	Ludden	BGS
Alan	MacDonald	BGS
Angus	MacDonald	MSP
Tamsin	Mather	University of Oxford
Dave	McCarthy	BGS
Sarah	Miles	NERC
Clive	Mitchell	BGS



Colin	Moffat	Scottish Government
Stuart	Monro	University of St Andrews
Simon	Mudd	University of Brighton
Rob	Ogden	University of Edinburgh
Richard	Pancost	University of Bristol
Simon	Parsons	Scottish Water
Gareth	Pender	Heriot Watt University
Judith	Phillips	University of Stirling
David	Pirie	Scottish Environment Protection Agency
Ian	Poll	Cranfield University
Linda	Pooley	RESAS (Research & Environment Science & Analytical Services)
Colin	Ramsay	Public Health Scotland
John	Redshaw	SEPA
Alasdair	Reid	Scottish Government
Stefan	Reis	CEH
John	Remedios	NCEO
Alison	Robinson	NERC
Helen	Schlesinger	Edinburgh International Science Festival
Marian	Scott	Uni of Glasgow
Andrew	Shepherd	University of Leeds
Tracy	Shimmiel	BGS/Lyell Centre
Colin	Simpson	Asthma UK Centre for Applied Research Centre
Fiona	Simpson	Scottish Government
Peter	Singleton	SEPA
Heather	Stewart	BGS
Stewart	Stephenson	Scottish Government
Mike	Strachan	Forestry Commission Scotland
James	Summers	UK Association for Science and Discovery Centres (ASDC)
Mark	Sutton	CEH
Rowan	Sutton	National Centre for Atmospheric Science (NCAS)
David	Thomas	Bangor University
Robyn	Thomas	NERC
Lesley	Torrance	James Hutton Institute
Christian	Trampenau	Photographer
Marsailidh	Twigg	CEH
John	Underhill	Heriot Watt University
Susan	Waldron	University of Glasgow
Douglas	Walker	Dynamic Earth
Charlotte	Waugh	SAGES
Tim	Wheeler	NERC
Callum	Whyte	Scottish Association for Marine Science (SAMS)
Rebekah	Widdowfield	The Royal Society Scotland
Andy	Wighman	MSP
Duncan	Wingham	NERC
Derek	Woollins	University of St Andrews
Lesley	Yellowlees	University of Edinburgh

