

## NERC Centre for Doctoral Training in Oil & Gas (2017 start)

**Project Title:** The social-ecological impacts of decommissioning – exploring pathways through multi-disciplinary geo-spatial modelling, visualisation and stakeholder engagement.

**Host institution: University of Aberdeen**

**Supervisor 1: Dr Tavis Potts; School of Geosciences**

**Supervisor 2: Dr David Green, School of Geosciences**

### CDT Research theme(s):

**Environmental Impact and Regulation – Decommissioning**

### Project description:



The objective of this PhD is to improve understanding of the social-ecological impacts of decommissioning and contribute to informing management pathways for selected case studies. It will develop and test innovative spatial modelling, visualisation and engagement techniques that navigate multiple interests relating to the environmental impact and

stakeholder response to decommissioning of infrastructure. The project will develop scenarios to inform spatial modelling of sites before and after infrastructure removal (e.g. different gradations of removal) and assess impacts on social-ecological variables and user groups. A secondary objective is to test accessible and low cost innovative visual technologies and social methods to support public engagement over decommissioning.

### Objectives include:

1. Development of participatory geo-spatial modelling tools to inform site based decommissioning (wells, rigs, and pipelines) across environmental (e.g. habitat integrity; species biodiversity) and socio-economic variables (e.g. fisheries, marine transport, renewables, recreation) in selected sites (e.g. Beatrice, Moray Firth).
2. Test geospatial models across scenarios and decommissioning options (e.g. complete vs partial removal; impacts on designations; stakeholder response) using innovative engagement and visualisation techniques.
3. Develop and test novel low cost social engagement tools such as digital touch table technology to improve stakeholder participation; inform strategic assessments and improve public awareness.
4. Explore how geospatial decision tools can inform marine spatial planning processes and marine protection designations in respect to decommissioning.



### Research context:

As the decommissioning process moves forward in the UK a range of scenarios and debates are emerging with respect to decommissioning strategy and influence on environmental impacts and marine stakeholders (e.g. fisheries, transport, ports, renewables energy, recreation).

The regulatory climate is changing with the delivery of marine spatial planning and development of marine protected areas yet there is limited understanding of the impact of decommissioning on these processes and designations particularly from a multi-disciplinary approach. Recent advances in visualisation and social engagement techniques both in terms of the technical (e.g. GIS data & modelling; digital touch tables) and social (systems approach frameworks; participatory mapping; ecosystem approach) provide the theoretical and practical frame for the project.

Submissions must conform to this single-sided A4 format. The Awards Committee reserves the right not to consider submissions that do not adhere to this condition.

## PhD Proposal: UK Oil and Gas Collaborative Doctoral Training Centre (2014 start)

### Research budget:

Support for purchase and development of two digital touch tables; support for GIS and modelling software and data purchase; regional travel in Scotland and support for stakeholder workshops through the PhD.

### Career routes:

The PhD will develop critical and 'in demand' skills in GIS, modelling and stakeholder engagement. Career routes in the oil and gas industry, government (e.g. policy, marine planning) and academia would be relevant pathways for employment.

### References:

Calvert, K; Pearce, J.M.; Mabee,W.E. Toward renewable energy geo-information infrastructures: Applications of GIScience and remote sensing that build institutional capacity, *Renewable and Sustainable Energy Reviews*, Volume 18, February 2013, Pages 416-429,

Macreadie, P. I., Fowler, A. M. and Booth, D. J. (2011), Rigs-to-reefs: will the deep sea benefit from artificial habitat?. *Frontiers in Ecology and the Environment*, 9: 455–461.

Potts, T., Alexander, K., O'Higgins, T. Supporting Marine Spatial Planning with Local Socio- Economic Data (MSP-LED). Centre for Expertise for Waters (CREW). Available from: <https://www.openchannels.org/literature/1442607124>

**Potts, T.**, O'Higgins, T., Hastings, E. Oceans of Opportunity or Rough Seas? What does the future hold for developments in European marine policy? *Philosophical Transactions of the Royal Society A. Phil. Trans. R. Soc. A* 13 December 2012 vol. 370 no. 1980 5682-5700

Scott, B.E., Irvine, K.N., Byg, A., Gubbins, M., Kafas, A., Kenter, J., MacDonald, A., O'Hara Murray, R., **Potts, T.**, Slater, AM., Tweddle, J.F., Wright, K., Davies, I.M. 2016. The Cooperative Participatory Evaluation of Renewable Technologies on Ecosystem Services. *Scottish Marine and Freshwater Science*, Vol 7, No 01.

