Institution: University of Southampton

Unit of Assessment: 17B Geography and Environmental Studies

a. Context

Geography and Environment (G&E) has a long-held ethos of research with non-academic partners for impact generation. This ethos extends across all levels from academic staff to postgraduate research (PGR) students. We interact with a wide range of user groups and deliver impact of regional to international reach on both socio-economic and environmental issues. Impacts link to the RCUK 'pathways to impact' process but also extend far more broadly, particularly through our well-established 'Geodata' brand which enables us to initiate and enhance impact through applied near-market research. We also benefit from and contribute to a University context that is highly successful in promoting impact.

Our impact outcomes *directly influence policy formulation* (e.g. influence on UK and New Zealand actions/policy promoting smoking cessation 2008-12; Moon) and *practice* (e.g. Brown's forensic pollen evidence since 2008 now featuring in the on-going Hague Bosnian war-crime trial). We also *generate improved understanding that contributes to decision-making* (e.g. 2013 support to FAO in policy development for the management of the River Indus; Carling, Darby).

Our impact focus is on three main client groups:

1. UK/Overseas Governmental and Multilateral Agencies: We rank 5th in UK Geography for governmental income (£2.455m; HESA 2008-2012). Impact over the REF period relates to national and international institutions (e.g. Natural England, Environment Agency [EA], English Heritage, Office for National Statistics [ONS], Department of Health, the NHS, the Home Office, the European Space Agency, UN-FAO, the Intergovernmental Panel on Climate Change [IPCC], World Bank). The ultimate beneficiaries are individuals and communities whose lives are affected through the actions and policies of governments, agencies and other user groups. Our governmental agency impacts are prominent in two areas: 1) *Population, health and wellbeing*. Examples include informing WHO of UK housing options for older people (Power, 2012) and evaluation of cross-European approaches to animal welfare standards and their certification for the European Commission (Roe, 2011-13). Mapping and monitoring of health and population in partnership with WHO, UNDP, World Bank, and Gates Foundation (Wright: Water, Health and Development case study, and Tatem, 2011 onwards) provides information used by 29 international organisations and 25 governmental agencies. Atkinson (2010-) has informed health agencies in seven low income countries on maternal health barriers and control of malaria and Trypanosomiasis. Martin (Census Outputs case study) has developed new geocomputational practices (zone design algorithms) used by ONS (2011 onwards) and the Australian Bureau of Statistics (2011) and recommended for use by Statistics New Zealand (2009). 2) *Sustainable development, human-environment interactions and environmental management.* Impacts are achieved through research that fosters *resilience to environmental risks* and enables *effective and sustainable environmental policy and regulation*. Work on climate change adaptation has helped to improve the preparedness of Cayman Island communities in the face of extreme weather (Tompkins, 2008). We have provided advice to the Mekong River Commission (MRC, 2009 onwards) on sustainable hydropower development (Darby). Wright's work (case study) has contributed to improved water quality standards in low income countries for a decade. Tompkins is a lead author for IPCC Assessment Report Five and contributed to the IPCC Special Report on Climate Extremes and Disasters 2012. Atkinson was lead author of a Foresight review on risk mapping for the UK Government (2012).

2. Industry and commerce. We rank 3rd in UK Geography for total industrial income (£1.163m; (HESA 2008-2012). Impact is achieved through research that *informs business decisions* or *assists innovation and design*. Key industry partners over the REF period include international businesses such as Tesco (Wrigley: Retail Geographies case study), major players in the oil and engineering sector, technology innovators, and information companies. Carling has advised both BP and Cairn International on the siting and required burial depths of the multiple river crossing points of two international trans-boundary energy pipelines in India (2009) to prevent washout during floods. Dash has worked with Infoterra-Astrium to develop novel satellite data processing techniques to support the Climate for Environmental Monitoring from Space facility at the Satellite Applications Catapult (2012-). Moon has worked for over a decade with TNS applying small-area synthetic

estimation techniques to the analysis of health care need in the UK and Europe.

3. NGOs, charities and practitioner organisations are a third user group; our impact here is linked to informed lobbying to *change public policy*, such as work on tobacco control (ASH Cymru, Moon. 2013) or *improvement of practice*, such as revised animal welfare procedures in laboratories in partnership with laboratory technicians' groups (Roe, 2012/13).

b. Approach to impact

We use five main **channels to promote impact** from our research:

1. **Regular meetings with key partners** in policy-making and business organisations (e.g. Ordnance Survey, ONS, EA, HR Wallingford, Tesco, TNS). Long-term collaborative working between research group members and external partners builds strong collaborations and provides a route for younger members of staff to be integrated into productive impact networks. We encourage visits and sabbatical periods with these key non-academic partners, for example Martin and Cockings have spent extended periods working in ONS and Moon is in constant dialogue with TNS over small area synthetic estimation. This approach also enables us to feedback to end users to maximise our influence on policy and practice.
2. **Advisory roles with governmental bodies**. Among many examples, Moon has had advisory roles with the Care Quality Commission (2009-2012) and ASH Wales (2011-), Martin serves on the UK Census Design and Methodology Committee and Tompkins on the UK Climate Impacts Programme. Wrigley is the sole academic representative on the UK DCLG Future High Streets Forum. Internal workshops help staff share experience about these interactions which enhance awareness of our research and lever impact. Geodata experience and expertise in securing impact with public sector bodies is utilised by all research groups.
3. **Collaborative applied impact-focussed research** with government and business. We develop collaborative impact plans with our user communities, drawing on stakeholder knowledge to integrate appropriate impact into research design. For industrial or governmental funded research, impact is built into contracts, subject to agreements on intellectual property. Examples include projects by Clarke with local government (2009-12), Power with welfare organisations across Europe (2010-13) and applied contracts through our Geodata brand. PGR and KTP activity plays an important part in this approach. During the REF period, 30% of PGR students had co-funding from commercial or public sector sponsors for projects of direct relevance to non-academic bodies. KTPs have included the development of a linked database to monitor the effectiveness of adolescent social services (Moon, 2008) and hospital capacity planning (Geodata, 2009). The influential ESRC RIBEN initiative, co-led by Wrigley, led to PGR-KT impact on the retail sector (six students), and the EA has co-funded three KT-PGR studentships.
4. **Public engagement with the wider community**. This approach has a direct impact on public knowledge through the dissemination of accessible research findings and provision of information and commentary on topical issues via print and broadcast media and social media (twitter feed: @geogsouthampton and #geogsoton). Examples include Roe's *Sky News* Interview on the horsemeat scandal (02/2013) and numerous contributions to TV interviews/documentaries and national print media (e.g. Sear – undersea surveys of the lost town of Dunwich (1/08, 7/10, 5/13), Edwards – environmental history (11/10), Brown- forensic palynology (5/12), (all BBC); Carling, Leyland – megafloods (Steadfast TV, 2012); Moon – military in schools (Telegraph 7/12, also RGS-IBG featured impact case study); Dearing – ecosystem services and poverty alleviation (Economist, 7/12).
5. **Training and professional development** with regional, national and international organisations. We focus on the *development and distribution of toolkits* and *capacity building*. Examples include the development of online tools for georeferencing and related training (Martin 2008) and a collaborative venture with Ordnance Survey familiarising school teachers with new developments in geographical research (2012, 2013). An established CPD programme in GIS and environmental management run by Geodata brings our research to the attention of further markets and catalyses additional research (e.g. working with Indian and Bangladeshi government agencies to develop practicable environmental assessment protocols (Darby, Dearing, 2012 onwards).

Our approach to impact is steered and monitored by the Research and Enterprise Group. Support

for the development of impact is provided by the Director of Research (Sunley) and Impact Champion (Edwards). Five research group leaders are tasked with advising their staff on impact potential during proposal development and research groups are supported with £1000 p.a. to hold meetings and away-days that focus on impact. Our publicity lead (Roe) and the University Media Office assist staff with material for dissemination. We engage with the University's Research and Innovation Services (RIS) to ensure that IP aspects of impact are clear.

Evidence for the success of our approach to impact includes our record on industry and government funding for applied impact-heavy projects (see above) and repeat contracts with satisfied external funders (over the REF period funding from DEFRA, MRC, FAO and Tesco plc; totals £1,700,000 (ca. 20% income, 26% contracts)); this brings long-term mutual benefit and continued involvement in agenda formulation. For example, Wrigley's longstanding research collaboration with the retail industry has achieved a high public profile and impacted globally on retail planning policy.

c. Strategy and plans

Our **impact strategy** is based on ensuring impact is embedded in research activity. To this end we promote cross-(research) group innovation with high impact potential, cultivate and maintain long-term relationships with key research users, and ensure impact is propagated through end-user networks as well as via effective use of publicity and the media. To further strengthen this strategy we used the mid-term review of the Southampton G&E Research Strategy (2009-14) to enhance our commitment to impact. Specifically we have: 1) Formally and fully incorporated within G&E the enterprise activity embodied by our Geodata brand (i.e., consultancy, provision of research services and continuing professional development). This embeds Geodata knowledge and skills in impact. We anticipate an increase in cross-disciplinary, impact-rich projects as a result.
2) Established a stakeholder advisory group chaired by Vanessa Lawrence (Director, Ordnance Survey and Visiting Professor). This group will assist G&E to anticipate future impact agendas and to engage in effective horizon-scanning and network building and will disseminate information on our expertise and impact achievements.

Our future plans will see us continue to promote our research to users and deepen the embedding of impact in our strategy. We will give particular emphasis to training PGRs and ECRs in impact identification and realisation. To ensure more effective publicity and networking, we are participating in *PublicPolicy@Southampton (PP@S)*, a 2012 initiative supported by the University's Strategic Investment Fund. PP@S arranges strategic engagement events between University staff and key external entities and administers an impact accelerator fund. It provides policy briefings and an enhanced social media presence that engages policy makers and the public.

d. Relationship to case studies

Our impact case studies demonstrate deep and sustained impact on public policy and practice at national and international scales building from world-leading research:

1. The **Census Outputs and Neighbourhood Statistics** case study exemplifies the strategy of building sustained relationships with key public sector partners. It shows how blue-skies research in geocomputation has been converted into real world application. A key aspect was staff secondment, and international uptake emerged from concentrated networking with relevant non-academic agencies.

2. The **River Restoration** case study exemplifies the achievement of impact on both the public sector and private engineering companies, based on partnership with agencies in the environmental sector: DEFRA, EA. It also illustrates the symbiotic relationship between our Geodata brand and academic research that enables impact to be strongly developed, and how impact is fostered by membership of advisory bodies (*e.g.* River Restoration Centre).

3. The **Water, Health and Development** case study shows how membership of national and international collaborations facilitates impact and illustrates support from the charitable sector (Gates Foundation). It demonstrates how specifically geographical research (GIS) contributes to a project that has wide impacts on sustainable development, human health and wellbeing.

4. The **Retail Geographies** case study demonstrates a similar trajectory, but with the focus largely on a private sector commercial partnership rather than a public sector linkage. The case study also shows our leadership of the ESRC-RIBEN scheme that linked academia and the retail industry and demonstrates how PGR students can help foster the impact agenda.