

<p><b>Institution:</b> University of Nottingham</p>
<p><b>Unit of Assessment:</b> UoA17 - Geography</p>
<p><b>a. Overview</b></p> <p>The unit arises from the School of Geography which has a holistic view of the subject and strives for excellence in geographical research that spans its breadth from the arts and humanities, through social, natural and physical sciences to include engineering and technology. In addition to UK-based staff, eight staff are based at the University's campuses in China and Malaysia; while not returnable in REF, they are integrated into the unit's research environment. Research is strategically organised around four distinctive, but overlapping themes: Cultural and Historical Geography, Economic Worlds, Environment and Society, and Geosciences.</p>
<p><b>b. Research strategy</b></p> <p>The unit's strategy is formulated by The School's Research Committee, and developed through its research themes, and collective discussions at annual 'Away-Days'. The strategy initially set out a research vision, targets and actions under eight headings (Publications; Income; Early career staff; New projects; Impact; PGRs; Esteem; and Research support), with mechanisms to foster development and monitor performance. Strategic planning has evolved into a central part of the unit's 'Academic Strategy Development Plan', monitored annually by the University. Achievements linked to strategic aims from RAE2008 show continued and sustainable growth, enhancing the unit's position as a leading centre of international excellence in geographical research:</p> <ol style="list-style-type: none"> <li>1. Achievement of key planned activities for each theme reported in RAE2008 through the advancement of theoretical understandings and the practical application of the human, physical and technological dimensions of geography, notably reflected in the outputs listed in REF2 and impacts discussed in REF3. Research quality is reflected indirectly in the outlets used for publication (e.g. <i>Science</i>), sources of research funding (e.g. RCUK grants), citations received, elections to prestigious fellowships (e.g. Daniels elected FBA) and prizes awarded (e.g. Smallman-Raynor's <i>Atlas of Epidemic Britain</i> awarded 2013 book of the year prize by the British Medical Association). Research theme contributions include:       <ul style="list-style-type: none"> <li>• Cultural and Historical Geography have developed world-leading research agendas in understanding cultures of landscape, governmentality and the connections of empire; environment and health, and the production of geographical knowledge.</li> <li>• Economic Worlds have contributed significantly to the UK's global standing in economic geography through high-impact research on: financialisation; financial centres and financial exclusion; economic knowledge; and consumption and value.</li> <li>• Geosciences, through research in biogeography, environmental reconstruction, informatics and water, have addressed major issues of climate and environmental change, including innovative uses of GIS and remote sensing technologies.</li> <li>• Environment and Society have developed innovative research around pressing concerns of ecosystems services, food security, sustainable environmental management, energy systems and water resource management.</li> </ul> </li> <li>2. Sustainable increase in research income year-on-year to a level that is now more than double that reported at the end of the RAE2008 review period. A strategic focus on the development of large bids should allow this trend to continue (e.g. Clarke awarded £2.7M from RCUK-DST; Endfield awarded over £1M from AHRC).</li> <li>3. A leading role taken in developing inter-disciplinary research within the University and beyond. This includes contributions to a suite of successful University AHRC, ESRC and EPSRC doctoral training centres/block grant programmes (DTCs/BGPs) and leading the University's contribution to a successful bid for a NERC Doctoral Training Partnership (DTP).</li> <li>4. Investment of ~£716,000 in the unit's research infrastructure. Research laboratory space has increased by 54% through the opening of a new specialist geosciences laboratory, with</li> </ol>

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additional laboratory technical support staff (from autumn 2013) ensuring the most effective return on laboratory-related research income and investment. Academic staff offices and shared spaces used for informal networking have also been improved and upgraded.

5. Established Departments at the University's campuses in China and Malaysia that have developed successful research programmes and provide opportunities for new ventures not currently linked to HEFCE funding streams.

While much of the unit's staffing, infrastructure, policies and practices remain unaltered since RAE2008, there have been four major developments, with on-going impacts:

1. Each research theme has been reviewed, through internal self-critical analysis and School Management Committee strategic review. The most significant change was the formation of a new Geosciences theme from the merger of the Environmental and Geomorphological Sciences and GIS themes returned to RAE2008. This was driven by a strategic decision to remove artificial divisions and foster engagement of staff on key topics as well as the natural outcome of the greater collaboration between these groupings identified as a future target in RAE2008. The appointment of three new staff has brought new vitality in relation to Antarctic science, biogeography and global climate (Swann, Algar and Gosling). Geosciences have also increased their Asian focus in environmental studies, with staff in the overseas campuses all active members. Two other themes, Economic Worlds and Environment and Society, have refocused activity, reflected in the renaming of the former. Economic Worlds continues to be a leading centre for geographies of money and finance, with a focus on crisis, financialization, exclusion and knowledge, and is currently exploring opportunities linked to an emerging economic-urban focus with the two overseas campuses. Environment and Society have refined their focus to develop innovative scholarship on ecosystems services, contaminated land, the sustainable use of water, and farming, food and forestry. Cultural and Historical Geography have extended existing strengths to develop high-impact research, including the production of major exhibitions, engagement with broadcast media, and reports on rural communities and slavery legacies, and public scholarship on urban squatting and digital humanities.
2. The unit has revised its strategy and research support schemes to foster activities that generate pathways to impact. The criteria used in assessing bids from staff for the unit's seed corn fund (to pump prime new research activity, up to £3K per award), overseas conference fund (to support dissemination at major conferences, up to £500 per award) and research leave scheme (to provide semesters dedicated to research), have been further aligned with the unit's research strategy. Funds increasingly support inter-disciplinary University initiatives (e.g. matched funding via University Priority Groups, up to £2K per award) especially if linked to bids to research councils or similar bodies. The unit allocates at least £10K per annum to pump-prime new research focused on strategic priorities (48 awards made in the review period).
3. Research is increasingly undertaken within collaborative frameworks within the University and beyond, for example through the Nottingham-Birmingham strategic collaboration fund, and the unit's leadership of the Midlands physical geography graduate training consortium. PGR funding is increasingly secured through AHRC, ESRC and EPSRC DTCs/BGPs, and the unit led the University's contribution to the successful ENVISION bid, led by Lancaster, for a NERC DTP.
4. The School has developed new Departments in the University's campuses in China and Malaysia, focused on environmental sciences. Asian-based staff were all appointed during the review period, and research was a key selection criterion. International staff engage with the UK campus, including via co-supervision of PhD research students, and mobility between campuses is funded by the unit and University. Committee meetings are timed to allow video-conference contributions from Malaysia and China. Over the review period, two of the unit's staff have been seconded to the Malaysia campus to facilitate cross-campus activity and provide leadership as Head of Department (Steven; McGowan).

Building on the plans emerging from the themes and encouraged by a 2011 University review of

the School, which included senior external geographers, the unit is increasingly ambitious in strategic planning. The unit is currently formulating four strategic initiatives for the next five years. Two are being developed for support by the University's Strategic Development Fund: (i) Health and Epidemiology, led by Smallman-Raynor, supported by a pre-emptive new staff appointment (Lewis, started October 2013) and which aims to build a world-renowned Geographical Centre for Epidemic Prone Diseases, and; (ii) Open Source Laboratory, with the Nottingham Geospatial Institute (NGI) and Engineering, led by Morley/Jackson. Two other initiatives develop inter-campus research and collaboration: (i) Tropical Environmental Sciences, led by Metcalfe, including major investment in a new 'clean lab' and (ii) Economic-Urban Geographies involving the overseas campuses led by Leyshon. The business case for each proposal sets out explicit targets and monitoring procedures to be adopted involving the School's Management Committee and Academic Strategy Development Plan (typically based on annual review of key metrics on income, staff, student numbers and outputs). Additionally, the unit continues to revisit its administrative and management structures to enhance staff time for research.

### **c. People, including:**

#### **i. Staffing strategy and staff development**

The unit prides itself on a strong collegiate culture, and its staffing policy aims to recruit and retain excellent researchers. All academic staff are free to pursue their own research programmes in an environment in which there is an emphasis on shared values and a commitment to research excellence. They have equal access to School facilities, benefit from extensive professional development opportunities in a supportive research environment and access to School funding schemes that are used strategically to support research that often includes activity beyond the unit, nationally and internationally. Staffing decisions are informed by the unit's research strategy and comply with all HR requirements. A workload model ensures fair distribution of roles. Early career staff have reduced teaching and administrative loads to aid integration into the School and development as a researcher, and are encouraged to apply for a University New Researchers Award, with matching School funds. Senior staff benefit from training opportunities including the University's Research Leaders programme.

Staff turnover has been low reflecting the School's strengths in staff retention, with only one leaver (Clifford to Kings College London) and two retirements (Bradshaw, Dugdale). These vacancies created opportunities for strategic bridging of sub-groups within the Geosciences theme, through the appointment at lecturer level of Algar, Gosling and Swann. As part of succession planning, Morley was appointed to provide leadership in geospatial science research ahead of Jackson's retirement. The award of a Leverhulme Major Research Fellowship to Daniels enabled the appointment of Forsyth to a permanent post, developing the Cultural and Historical theme's strengths in landscape and the cultures of geographical knowledge.

The unit actively supports and encourages career progression at all levels to help nurture and retain research leaders. Ten staff have been promoted: Jones to Lecturer; French, Hall, Legg, McGowan, Morris, Mount and Swain to Associate Prof.; Boyd and Hall to Reader; and Endfield to a personal chair. Currently, the unit's composition is 17.5% lecturing staff (average age - 34yrs, ratio male:female ~6:1), 37.5% associate prof. (42yrs, ~1:1) and 45% professors (53yrs, ratio ~3.5:1).

No category C staff are returned, but the unit benefits greatly from the inputs of honorary/Emeritus staff who have helped foster links with national centres (e.g. British Geological Survey) or key organisations (e.g. Ordnance Survey) and contributed to the development of the unit's outward looking activities (e.g. the NERC Earth Observation technology cluster it hosts). The School also has excellent support staff, reflected in their receipt of major internal (Vice-Chancellor's award) and national (Higher Education Academy) awards.

Building on recent successes (e.g. Leverhulme Major Research Fellowship (Daniels), Philip Leverhulme Prize (Legg) and Leverhulme Early Career Fellow and AHRC Fellow (McDonagh)), staff are encouraged to apply for major fellowships. The recruitment of early-career researchers is also encouraged through the University's Nottingham Research Fellowship, and Anne McLaren Fellowships (for female researchers). Staff have also benefitted from University Priority Group

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funding, with £68K awarded during the period (Beaverstock, Clarke, Endfield, French, Gosling, Jewitt, Leyshon, Priestnall, Thorne).

All staff, whatever their grade or seniority, are equally eligible for seed corn funding, with research excellence and fit to strategic priorities the key assessment criteria. The unit's implementation of the University's policies on equality and diversity was highlighted as a major strength of the School in the University's 2011 review of the School. Staff are encouraged to attend professional development events, and the unit offers mentoring support to all staff. An annual Personal Development and Performance Review (PDPR) focuses on career development. All staff are entitled to apply for research leave (25 have had one semester leave during the period), with research leave proposals assessed on their projected programme of outputs and likely impacts. Staff can also be bought-out from normal duties (e.g. Haines-Young for one year) if external funding covers replacement teaching. Additionally, staff have taken eight periods of maternity leave (average length ~7 months) and five staff have taken paternity leave (~ 1.5 weeks). The unit has supported staff by allowing, for example, returners from maternity leave to work part-time, if desired.

With few scheduled retirements in the next five years, succession planning is focused on management of key leadership roles (e.g. Head, Deputy Head and the Directors of Research and Teaching). Heads of School are appointed on a four-year term and mechanisms have been used to help protect their research programmes, with completion of the term of office followed by a year's research leave (Metcalf, Watkins have benefitted; Leyshon was granted one semester of leave prior to taking up the role). Administrative and management roles are allocated appropriately and fairly, with senior roles normally filled by the professoriate, and more junior staff afforded opportunities to take on roles aiding skills development and career progression.

The unit is fully committed to embedding the principles of the European Commission '*HR Excellence in Research*' to implement the Concordat to Support the Career Development of Researchers, which is aligned to the European Charter for Researchers and Code of Conduct for their Recruitment, and the QAA Code of Practice for Research Degree Programmes. The unit has a research staff group which has benefited from previous Activity Performance Review (appraisal) and now, PDPR. Research staff are reviewed in PDPR, and mentored, by an individual who is not their project PI, and PIs are informed of their role in researcher career development. The quality of the University's research environment is reflected in its receipt of The Scientist 2009 Best Places to Work in Academia and Stonewall University Champion as well as the unit's development of a successful Athena Swan Bronze application. Following this award, the unit has set in place systems to run an annual PGR and PDRA careers event from 2014 and to offer peer-on-peer mentoring for PGR students. In all of its work, the unit adopts the University's Code of Research Conduct & Research Ethics (based on the ESRC/NHS) to review all research projects, and operates its own ethics panel.

**ii. Research students**

There are normally around 60 PGR students in the unit. Over the assessment period, the unit has graduated nine students per annum on average. Over half of the students have been funded through RCUK studentships, with 31 funded through the AHRC, EPSRC, ESRC, NERC and ESRC/NERC. The unit has also secured EU and international studentships through other prestigious sources, including Commonwealth Scholarships, Nottingham University Excellence awards, and Faculty Studentships. Home/EU students are increasingly funded through DTCs/BGPs (AHRC, EPSRC and ESRC) and the unit has led the University's contribution to the successful bid for a NERC DTP. The unit leverages its own resources to co-fund studentships, awarding six full school studentships over the assessment period (at the standard RCUK rate). Reflecting the unit's commitment to collaborative and applied research, eight RCUK CASE and CDA studentships have been funded with collaborative partners, including the Science Museum, Derby Museum, British Geological Survey, Commission for Rural Communities, and Waste Recycling. 14 studentships have been co-funded with partner organizations, including the Environment Agency, Operation Wallacea, The Game and Wildlife Conservation Trust, and the Petroleum Technology Development Fund, or through international government sources including

Malaysia, Mexico, Nigeria, Portugal, Greece, and Canada.

The unit's PGRs are fully integrated into the unit's research environment and participate in research activities associated with their respective research theme(s). Students are allocated two supervisors with whom they meet a minimum of 10 times a year (six times for part-time students) for supervisions, all of which are formally documented. Each student has an internal assessor who monitors student progress, conducts the student's annual reviews and, together with an independent external examiner, typically acts as internal examiner for the final thesis. Research training is an integral part of the PhD programme and the progression of students to completion is aided by a flexible training programme tailored to individual needs. This is overseen by the student's supervisors and the unit's Research Training Officers. The PGR's 'training contract', which is regularly reviewed through the annual review process, facilitates the production of a 'Research Training Portfolio' that helps students evaluate their skills base and identify training needs throughout their studies. The training programme can include modules from within the unit, DTC modules and the University's Graduate School as well as through other activities (e.g. language training via the University's Language Centre). Specialist support and 'methods clinics' are also provided by the Methods and Data Institute which are valuable to those engaged in quantitative empirical research. The student must give at least two seminar presentations, one at the end of their first year as part of the annual Postgraduate Student Research Workshops that are an important part of the School's calendar, and one in their final year as part of their research theme's seminar programme. PGRs benefit from a range of collaborative external training activities (e.g. the unit led and remains part of the Midlands Consortium for Graduate Training in Physical Geography). Other training opportunities are accessed depending on the specific research area (e.g. British Society for Geomorphology Postgraduate Training Workshops) while students funded via the ESRC DTC can attend specialist modules offered at Warwick and Birmingham and national level training events at the Centre for Research Methods.

Opportunities are also available to visit University partner institutions in and beyond Europe (e.g. through Universitas 21 Prize Scholarships and Erasmus/Socrates opportunities). PGR students are encouraged to take on tutoring and demonstrating roles supported by compulsory training workshops run by the University's Professional Development Unit. As part of the commitment to PGRs from entry to exit, the University also provides centralised careers advisory services. The destinations of recent PGR alumni include: academia (e.g. National University of Singapore, King's College London, Southampton, Hull, Queen Mary (London), University of Central Lancashire, University of West of England, St Mary's, and Cranfield) and the public and private sector (CCLA, Environment Agency, Experian, Greek Forest Service, Forestry Commission, RSK Consulting).

PGR students have formal representation in the unit via the PGR committee, which has separate student representatives for full- and part-time as well as home/EU and International students. The unit's students also contribute to activities beyond the School, including: cross-faculty university research initiatives (e.g. Landscape, Place and Space Research Group), but also beyond the University including service to the British Ecological Society Tropical Ecology Group and the Royal Geographical Society-Institute of British Geographers (RGS-IBG). In the latter PGRs have acted as social coordinator to the Postgraduate Forum, committee and PGR representative for the Rural Geography Research Group, committee members and conference organisers for the Historical Geography Research Group (HGRG; including hosting the 16<sup>th</sup> Practising Historical Geography conference (2010)), and chair of the organising committee of the HGRG Postgraduate mid-term conference (also hosted by the unit in 2012). PGRs are encouraged to present their research at international conferences and many outputs, including those returned in REF2, have PGRs as lead or co-authors.

The growth of the PGR community is one of the unit's strategic goals, with a target to significantly increase the number of new starter FTE Home/EU and international PGR students by 2015, through continued involvement with the DTCs/ BGP (benefitting from the £14.6M successful bid in AHRC BGP2 and involvement in the £4.9M NERC DTP ENVISION) and by continuing to fund at least one Home/EU full-fees studentship a year. The unit will also build on existing University-doctoral training, making significant contributions to activities which focus on digital technology and

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energy, including the RCUK funded Horizon DTC focused on digital economy research, the EPSRC Efficient Fossil Energies Technologies International Summer School run through the unit as part of the Midlands Energy Graduate School, the International Doctoral Innovation Centre at the Chinese campus, and the Malaysia campus Graduate School. Linked to strategies to enhance impact, the unit will continue to engage with a range of stakeholders in order to develop CASE and CDA studentships.

PGR support includes a desk, a lap-top or desk-top computer and normal software packages plus photocopying facilities and a minimum annual research support grant of £500 to help with costs of fieldwork, travel and incidental research expenses. Individuals can apply to the Graduate Research Support Fund for up to £1K a year for unforeseen fieldwork or the purchase of additional software/data and attendance at conference and external training events. PGRs in their second and third years can also apply to the Graduate School for up to £600 to attend international conferences with guaranteed matched funding from the unit.

**d. Income, infrastructure and facilities**

Annual research income now stands at c£1.59M, >100% higher than the £777K per-annum reported at the end of RAE2008. Of the total £6.20M spent, ~48% was from RCUK sources; there was also an additional support of c£313K from RCUK facilities. During the review period, the total award value of research income to the School's academic staff has been c£10.18M.

Research income reported here is only a component of the School's total research income; the two overseas campuses have been awarded £1.1M in research funding. Reflecting the unit's academic breadth, funding in the UK has come from the AHRC, BBSRC, ESRC, EPSRC, STFC and NERC, the British Academy, British Council, Leverhulme Trust, Royal Society, Wellcome Trust, EU (e.g. FP7) and industry (e.g. SciSys Ltd). This funding supports research across the breadth of the subject and as a result, many of the outputs identified in REF2 link to activity that was supported by research income generated in RAE2008 or REF2014. Other projects are funded from Government and related sources (e.g. DEFRA; Natural England; CEH Edinburgh; Environment Agency, Ordnance Survey). The unit leads or is a partner in many major collaborative projects, evident within the University (e.g. the University's Priority Group on 'Integrating Global Society' (IGS), led by Beaverstock), nationally (Daniels' leadership of the AHRC Landscape and Environment Programme; a £2.7M RCUK-DST Rural Hybrid Energy Enterprise Systems (RHEES), led by Clarke; co-I in £13.1m HORIZON Digital Economy Hub), and internationally (a trans-disciplinary EU COST Action involving Universities, national mapping agencies and industry from 30 countries, led by Foody).

The unit's research strategy seeks to increase funding and diversify income streams. To facilitate this, the unit has increased the size of its internal funding schemes by over 30% since the last review period and uses these to support activities that aid growth by leveraging external income (e.g. providing matched funds for new inter-disciplinary initiatives that focus on RCUK priority topics). The University's Methods and Data Institute also provides inter-disciplinary support for proposals with a strong quantitative component. The unit contributes to a mentoring and peer review system across the Social Science and Arts faculties for grant applications; nine staff assist with a 'demand management' system introduced by the University's Centre for Advanced Studies (CAS) to help produce high quality applications to external funding bodies. A key focus is to enhance bids prior to submission, and to provide administrative support. Beyond the Faculty, the unit leads the University's system for internal peer review of NERC grant applications, and contributes to the EU funding strategy committee. Throughout, the unit is seeking to contribute its expertise and knowledge, often via the University Priority Groups and NGI, to major geographical issues including climate change, poverty and inequality, energy and food security, money and finance, economic competitiveness, culture and identity, landscape and environment, internet and mobile technologies and water resource sustainability. The unit has created an Impact Strategy to help compile evidence to support future claims. Collaborative links with other institutions and industry are fostered through individual activity and via formal means such as the NERC Earth Observation Technology cluster, hosted by the unit under Aplin's leadership.

The unit helps staff individually, and by research theme, for example hosting training events on grant costing and media engagement, and investing in laboratory and capital equipment. New, 75m<sup>2</sup>, Geosciences laboratories have enhanced capabilities in environmental change research and associated PGR training, particularly in relation to the provision of a 'clean space' for sample preparation. The unit has introduced a three-year running average on personal research margin (10%) which ensures a flow of funds to staff leading on awards after the end of a project to support and incentivise the development of new bids as well as potential impact. Staff also benefit from a standard annual payment into their individual research accounts which can be used to support their research activity. The University also provides support to aid the dissemination of research. Recognising the evolving trend for Open Access publishing and mandates from RCUK and possible demands of future REF assessments, the University has established agreements with major publishers to facilitate 'gold' Open Access publication and an output repository, Nottingham e-Prints, that provides a route to 'green' Open Access publication. The unit also uses contemporary social media as a means to engage the public with its research.

Seminar series, with external and internal speakers at research theme and at School level, bring all academic staff together and forms part of PGR training programmes. All academic staff have their own office, research students have shared offices and there are offices for the unit's 12 support staff (a school manager, five administrative/clerical staff, a cartographer, three technicians (a fourth started in autumn 2013 to support the new geosciences laboratory) and two finance officers) that facilitate research and its management. The quality of the support provided by these staff is reflected in the receipt of major internal and national awards. All staff and students also enjoy the use of a large common room, used widely for coffee breaks as well as a range of informal gatherings during the year.

Outside the School, research funding applications are fully supported and costed through the University's Centre for Advanced Studies (CAS). The unit also benefits from an on-site Web and E-learning officer, who provides input into research projects. Within its space the unit has four laboratories for physical analysis of sediments and water, three computing laboratories including one for advanced visualisation of 3D geospatial data sets and a general resource centre that contains the map library and associated resources. The University provides centralised computing and IT support and a Systems Development Officer within the unit.

The unit's physical infrastructure at the main University Park campus benefited from more than ~£716,000 spent on improvements to the Sir Clive Granger building, mainly in terms of refurbishing staff offices, refiguring space and enhancing and extending laboratory facilities. The only UK staff not housed in the building are formally linked to the NGI (Jackson and Morley) and located in a new c£4.7M purpose-built building shared with Institute partners (Engineering) on the multi-award winning Jubilee campus located approximately a mile away from the main campus and connected to it by frequent dedicated free hopper bus services. The NGI building includes dedicated space for PGR and hosts a set of laboratories and support services, including field vehicles, for those working in geospatial sciences. In addition, the unit benefits from well supported central services (e.g. a set of major libraries and supportive Information Services). The key resources for geographers are in the Hallward library and CAS which are located in buildings close to the School on the University Park campus which is ranked as the greenest in the world in the current GreenMetric World University Rankings that assess environmental friendliness.

#### **e. Collaboration or contribution to the discipline or research base**

The unit has made a notable contribution to the discipline, with staff holding significant national and international leadership roles, steering research programmes and networks, and producing research which extends and transforms disciplinary and interdisciplinary agendas. This activity and engagement with the wider research community has, in return, helped to enhance the unit's intellectual environment as well as its sustainability and vibrancy. Examples are listed below.

Each research theme has made a major disciplinary contribution. The Cultural and Historical Geography theme pursues a distinctive body of cultural-historical research, playing a key role in sustaining this important part of the discipline of geography in the UK, and producing world-leading

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scholarship on landscape, environment, post-colonialism, medical geography and cultures of geographical knowledge. The Economic Worlds theme has transformed geographical perspectives on economic life through studies of consumption, production and governance, with scholarship informing economic policy, and the unit is a world-leading centre for studies of money, finance and value. The Environment and Society theme has demonstrated the impact of original scholarship in driving policy agendas, with innovative conceptual work shown to have practical application in areas such as ecosystem services, energy systems, food networks and contaminated land remediation. The Geosciences theme applies innovative conceptual and technological research to advance new understandings of pressing geographical concerns including climate change, hydrological process and biodiversity, with major policy contributions informed by original research and scholarship.

The unit has a strong culture of interdisciplinary and collaborative research and plays a leading role in facilitating intra and inter-institutional academic collaboration internationally and domestically. Interdisciplinary and collaborative research is supported and fostered through:

**i) Interdisciplinary university collaborations:** externally funded institutional consortia (e.g. EPSRC Bridging the Urban and Rural Divide, and Nottingham Digital Economy hub); leading several University research centres/institutes, e.g. the NGI (joint with the Faculty of Engineering), the Centre for the Environment (with Biosciences, Biology and Engineering) and the Energy Technologies Research Institute. The unit contributes to the University's interdisciplinary research environment through involvement in 8 of the University's 13 priority groups and, reflecting the unit's funding success rates, playing a significant role in the management of AHRC funding throughout the University.

**(ii) Leading and/or hosting formal networks and international research consortia:** including NERC Earth Observation Technology Cluster; RCUK Rural Hybrid Energy Enterprise Systems (RHEES); Leverhulme Trust funded Mexican Climate Change Network; EU funded sustainable regeneration CABERNET Network; the European Common Forum on Contaminated Land; Bioavailability Research Group of Europe a 30 nation EU COST Action on mapping; the Forest Research Programme, funded by Operation Wallacea and the FIRST Faraday/IPMnet (DTI/EPSRC grant); the Flood Risk Management Research Consortium; the China-UK Flood Study; the U21 Water and Sustainable Cities programme; and the EU funded Restorpeat and Carbopeat projects.

**(iii) Externally funded grants, contracts and PhD student supervision with more than 35 HEI's and institutes in the UK including:** Aberystwyth (AHRC, EPSRC); BAS (NERC); BGS (NERC, AHRC); Birmingham (EPSRC, NERC); Brighton (Leverhulme); Bristol (AHRC, EPSRC); Cambridge (EPSRC, Leverhulme, NERC); Cardiff (EPSRC, NERC); CEH (EPSRC, NERC, BIS); Durham (NERC); Exeter (AHRC, EPSRC, LWEC); Glasgow (AHRC, NERC); Hull (ESRC, NERC); Imperial (BIS, EPSRC); KCL (NERC/ESRC); Lancaster (ESRC, EPSRC, Environment Agency); Leeds (AHRC, BIS, EPSRC, ESRC); Leicester (EU, EPSRC, NERC); Loughborough (EPSRC, NERC); LSE (EPSRC); Manchester (EPSRC); Newcastle (EPSRC); Plymouth (EPSRC, NERC); Oxford (ESRC, EPSRC, EU); Reading (BIS, DEFRA); Sheffield (BIS, EPSRC); Southampton (BIS, JAXA); St Andrews (NERC); Sussex (AHRC); Swansea (EPSRC); UCL (NERC); UEA (BIS, AHRC); York (AHRC, NERC).

**(iv) Strong international collaboration with over 150 institutes in more than 45 countries including:** Europe (e.g. Bologna, Bonn, Bucharest, Freiberg, Gent, Heidelberg, Helsinki, Leuven, Madrid, Utrecht); the former Soviet Union (Al Farabi, Donetsk); North America (e.g. Berkeley, Boston, Chicago, Harvard, McMaster, Ottawa, Rochester, Texas, Toronto, UC Davis, UC Irvine, UCLA); Latin and South America (e.g. National Institute for Space Research Santa Catarina, Brazil; Smithsonian tropical Research Institute, Panama; Universidad de la Frontera; Universidad Nacional Autonoma de Mexico); Australasia (e.g. Auckland, University of South Australia, University of Western Sydney); Asia (e.g. Bangladesh Open University, Chinese Academy for Sciences Research Institute, Indian Institute of Technology, Japan National Institute for Environmental Studies, National University of Taiwan, Shanghai Advanced Research Institute,

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Universiti Malaysia Pahang) and Africa and the Middle East (Cadi Ayyad, Cairo, Lilongwe University of Agriculture and Natural Resources, Rabat, Zambia).

**(v) Collaborative PGR supervision including:** AHRC, ESRC and EPSRC DTCs/BGPs (e.g. £20M EPSRC led Horizon DTC involves over 100 University and industrial partners; membership of the AHRC BGP 2 comprising 410 studentships with access to its Student Development and Cohort Development fund); RCUK-funded PhD consortium and co-supervising PGR students based at the two overseas campuses and in other institutions on a goodwill, basis, and hosting visiting PGRs (e.g. Brighton, Chicago, Gent, Loughborough, UCL); collaborative research and PhD student supervision with other University units (e.g. Archaeology, Biology, Business School, Civil Engineering, Computer Science, Environmental Science, History, Sociology, Space Geodesy).

**(vi) Research collaborations with research users including:** (i) third sector organisations (British Library, English Heritage, Science Museum, Tate, the Household Energy Network, National Trust, Royal Geographical Society (with IBG), Nottingham Contemporary); (ii) the policy making community (Commission for Rural Communities; DEFRA, DFID, Environment Agency, Malaysian Palm Oil Board); and (iii) industry (Argans Ltd, DMcii, Optech). These collaborations enhance the unit's intellectual environment through facilitating impact generating activities (e.g. see REF3).

The unit's staff have also made significant contributions to the vitality of the discipline through:

**(i) Providing leadership to refereed journals as editors and board members including:**

**(a) Editor-in-chief/Editor:** *Environment and History*, (Endfield); *Frontiers of Biogeography* (Field); *Int J Remote Sensing*, *Remote Sensing Letters*, (both Footy); *ClimateSciNet* (Springer) (Gosling); *Geoforum* (Hall); *Geophemera* (Jones); **(b) Associate/Assistant/Corresponding Editor:** *Global Netw* (Beaverstock); *J of Maps* (Boyd); *Global Ecology & Biogeogr* (Field); *Landscape Ecology, Ecological Informatics* (both Footy); *Landscape Ecology, Land Use Science* (both Haines-Young); *Cult Geogr in Practice* (Matless); *J Paleolimno* (Metcalf); *Landscape Ecology* (Potschin); *Bull. Ind. Assoc. Engineering Geology*; *Contaminated Land* (both Nathanial); *Eur Urban Reg Stud* (Swain)  
**(c) Editorial boards** – guest editorships indicated by \*: *Climatic Change\**, *Cult Geogr\**, *Culture, Theory and Critique*, *Ecological Indicators\**, *Ecological Informatics\**, *Econ Soc, Environment and History*, *Environment and Planning A\**, *Futures\**, *Geoforum\**, *Geography Compass*, *Geocarto Int*, *GeoJournal\**, *Geogr Ann B\**, *Geographical J*, *Geomorphology*, *Global Planet\**, *Imago Mundi*, *Int J of Appl Earth Obs and Geoinformation*, *Int J Biometeorol\**, *Int J of Geogr Inf Sci\**, *Int J Applied Remote Sensing*, *Interventions\**, *ISPRS J of Photogrammetry and Remote Sensing*, *J of Contemporary European Studies*, *J Hist Geogr\**, *Land, Landscape History*, *Open Remote Sensing J*, *Open Source and Web GIS\**, *Photo Interprétation (European Journal of Applied Remote Sensing)*, *Precision Agriculture*, *Proceedings of National Academy of Sci\**, *Prog Phys Geog\**, *Public Culture\**, *Regional Studies\**, *Remote Sensing\**, *Remote Sensing of Environment*, *Scott Geogr J*, *Soc Cult Geogr*, *Tate papers*, *Transactions in GIS\**, *Water Resources Res*.

**(ii) Providing peer-review and leadership to funding bodies through:**

**(a) Membership of RCUK Panels** – Beaverstock (ESRC First Grants and Postdoctoral Fellowship), Clarke (NERC: Pool of Panel Chairs, Chair of Fellowships Panel(s), Chair of UK Drought Panel(s), Chair of International Strategy Panel, Chair and Member of Standard Grants Panel(s), Deputy Chair and Member of Knowledge Transfer Panel, Member of Small Grants Panel(s), Member of Consortium Panel(s), Member of Antarctic Initiative Panel), Daniels (AHRC, Director of Landscape and Environment Programme); Footy (Chair of NERC Human Modified Tropical Forests programme, member NERC Technology- Sensor Networks panel, member NERC Skills Development Awards Assessment Panel, member BBSRC Tree Health and Plant Biosecurity panel); Legg (AHRC BGP2 Review); Watkins (Chair AHRC Panel C, Chair AHRC Research Grants - Cultures and Heritage). **(b) Membership of RCUK peer-review colleges/pools** – Beaverstock, Clarke, Daniels, Footy, Hall, Heffernan, Legg, McGowan, Potschin, Smallman-Raynor, Watkins. **(c) RCUK Facilities, Advisory Boards** - Aplin (NERC Earth Observation Forum); Boyd (NERC - Airborne Research and Survey Facility Steering Com.), Daniels (RCUK Advisory Board), Endfield (AHRC, Care for the Future), Haines-Young (NERC), Heffernan (AHRC strategic reviewer), Metcalf (Chair, NERC Isotopes Geoscience Laboratory Steering Com, NERC Radiocarbon

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Steering Committee), Watkins (AHRC Strategic Reviewer). (d) Staff have also reviewed for a range of other RCUK and other bodies including: (i) MRC, Leverhulme Trust, Wellcome Trust; British Academy; British Council; RGS-IBG (ii) Funding agencies e.g. in: Austria, Canada, China, Denmark, Estonia, France, Germany, Hong Kong, Ireland, Israel, Luxembourg, Netherlands, Portugal, Romania, USA.

**(iii) Undertaking significant roles in Learned Societies including:**

Aplin – Chair, Remote Sensing & Photogrammetry Society; Member, European Association of Remote Sensing Laboratories and UKGEO forum Com.; Boyd – Co-Chair, Remote Sensing & Photogrammetry Society Laser Scanning and LiDAR Special Interest Group; Daniels – Council RGS-IBG; Endfield – Honorary Secretary (Research) and Council, RGS-IBG; Chair RGS-IBG Research Groups Com., RGS-IBG Field Programme Steering Group; Field – Secretary, Int. Biogeography Society; Foody – Council, Remote Sensing & Photogrammetry Society; Heffernan – Chair, Heads of Geography Departments Group, RGS-IBG, Vice-chair IGU Commission on History of Geography; Jackson – Chair, Association of Geographic Information Laboratories for Europe, Open Geospatial Consortium Europe; Jones – British Society of Geomorphology; Metcalf – Chair, RGS-IBG Expeditions and Fieldwork Com.; McGowan – Treasurer, International Society for Diatom Research; Morris – Secretary, RGS-IBG Rural Geography Research Group; Mount – Member, GIS Research UK National Steering Group; Chair, GIS Research UK Publication Com.; Swann – Secretary, Micropalaeontological Society; Watkins – Chair, Ecological History section International Union of Forest Research Organisations; Chair, Society for Landscape Studies. The unit hosts the office and staff of the Remote Sensing & Photogrammetry Society.

**(iv) Organisation of major international conferences:**

Chair or member of scientific committees of numerous conferences held in, for example: Belgium, Brazil, Cape Verde, China, Cyprus, Chile, Czech Republic, France, Germany, India, Ireland, Malaysia, Mexico, Portugal, South Africa, UK, USA. Specific examples include: Daniels – Chair, RGS-IBG Annual Conference, 2011; Field – Int. Biogeography Society Biennial meeting, 2011.

**(v) Doctoral external examining**

**(a) UK** - over 55, including e.g. Aberystwyth (x3), Birmingham, Bristol, Cambridge, Durham, Edinburgh (x2), Exeter, Glasgow, KCL (x6), Lancaster (x5), Leicester (x3), Liverpool, Loughborough, LSE, Manchester, Newcastle (x3), Open, Oxford (x3), Portsmouth (x3), QMUL, Reading, RHUL, Sheffield, SOAS, Southampton (x2) Swansea (x2), Surrey, Sussex (x2), UCL, UEA, York (x2). **(b) International** - over 30, including e.g. Al-Farabi, ANU, Chicago, Flinders, Gent (x3), Hong Kong (x2), Jyväskylä, Oulu, Madrid (x2), Melbourne (x2), Paris, Putra, Stockholm, Tampere, TCD (x2), Twente, Trento (x2), Wageningen (x2), Witwatersrand.

**(vi) Other significant contributions:**

Indicators of wider influence contributions made by the unit are reflected in for example:

**(a) Major awards/prizes** including: Daniels elected FBA; Beaverstock, Daniels elected AcSS; Legg received Philip Leverhulme Prize; Foody elected Fellow of IEEE, awarded Cuthbert Peek Award (RGS-IBG), Remote Sensing & Photogrammetry Society's gold medal and a RSPSoc merit award; Smallman-Raynor won the British Medical Association's Medical book of the year and its Public Health book of the year awards; Leyshon won the Ashby Prize, *Environment and Planning A*; Gosling elected a FRMetS; Boyd received the ITT Visual Information Solutions Wiley-Blackwell Prize; Nathanail awarded Glossop Medal; **(b) Invited Visiting and Honorary appointments** including Beaverstock (Honorary Professor, Otago; Visiting Professor, Gent; Visiting Researcher, UWS, Sydney); Legg (Fellow, Jawaharlal University); Metcalf (NIGL/BGS Associate; Advisory Board Member, Copenhagen Uni.); Thorne (Affiliate Professor, Colorado State University, Visiting Professor Portland State University) **(c) International contributions to subject capacity building** e.g. Leyshon contributed to the 2012 round of Canada Excellence Research Chairs; Foody to human capacity and University centres in Earth Observation, South Africa; Foody provided a review of the future Landsat programme report for the US National Academies. The unit also contributed extensively to the ESRC/AHRC International Benchmarking of Human Geography, 2012 (Daniels, Endfield, Foody, Heffernan, Leyshon, Watkins).