

<p>Institution: Kingston University</p>
<p>Unit of Assessment: 17, Geography, Environmental Studies and Archaeology</p>
<p>a. Overview</p> <p>Research in the Unit centres on the School of Geography, Geology and the Environment and is carried out under the auspices of the Centre for Earth and Environmental Science Research (CEESR). CEESR has three research groups:</p> <ul style="list-style-type: none"> • Environmental Change (EC): Environmental Geochemistry and Palaeo-environments are the core research strengths of the group and have been augmented by emerging research on Environmental Geomorphology and Geohazards (Brown, Jarvis, Smith and Waller) • Geodynamics and Crustal Processes (GDCP): processes controlling the evolution of the Earth's crust, its mineral potential and relationship to the mantle are the central focus of the group (Treloar and Miles) • People, Place and Environment (PPE): the people-environment interface, population dynamics and lifestyles are a focus for research incorporating the application of Geographical Information Systems (Hughes, Kelly, Middleton and Walford) <p>The first and second groups have consolidated their focus during the current assessment period. The third group, which developed from the former Agriculture Environment People group, emphasises processes of human-environmental interaction and change.</p>
<p>b. Research strategy</p> <p>The Unit has progressed over the last three research assessments: in RAE 1996 the submission was graded 2; the RAE 2001 submission achieved 3b (flagged for excellence of research in Geodynamics and Crustal Processes); and in RAE 2008 strengthening of geographical research alongside the previously noted excellence in the Earth Sciences resulted in a stronger submission where research activity attained an average rank of 2.20 (30% of research activity graded 3* or 4*). The current submission reflects the targeted deployment of resources arising from the previous assessment and strategic funding by the University to strengthen geographical research. Promotion of senior researchers and recruitment of talented new colleagues has produced a balanced age profile and collaboration with industry has helped to sustain the Unit's research student community. The Unit's effective targeting of resources to support research, a diligent staffing policy and diversification of external income streams have enhanced research strengths and allowed exploitation of new opportunities, including further multidisciplinary and collaborative ventures both within and outside the University.</p> <p>i Review of strategic objectives</p> <p>The Unit's strategic ambitions are (1) to undertake research that develops an understanding of the interface between the human and physical environments and (2) to seek solutions to problems that support sustainable decision-making and social justice. The Unit's strategy combines core research aiming to advance understanding of processes and systems operating at this interface and applied research focusing on specific problems and topics. CEESR aims to maintain a pervasive and sustainable research culture throughout its membership. The Unit set five strategic objectives in its RAE 2008 submission, and work during the current assessment period has delivered on these as follows:</p> <ul style="list-style-type: none"> • Develop GDCP's links with industry: research income streams, doctoral student numbers and non-academic impact have increased as a result of collaborative work with Randgold Resources, European Goldfields, Euromax Resources, Petroleos de Venezuela Sociedad Anónima and the Mexican National Council for Science and Technology in the fields of orogenic gold and epithermal ore deposits. • Grow research activity in Human Geography: success in securing external research funding, exploitation of links with international organisations, new staff appointments and recruitment of research students have helped to refocus Human Geography research,

Environment template (REF5)

expanding work on population and lifestyles (international and internal migration, population ageing), sustainable lifestyles and planning.

- **Realise potential and aspirations of younger researchers:** research in core research areas has been consolidated by increasing capacity through new appointments, limiting teaching responsibilities and providing sabbatical opportunities.
- **Strengthen internal and external research links:** researchers in the Unit have developed interdisciplinary collaborations with cognate disciplines within the University and other HEIs (e.g. Archaeology, Gerontology, History, Physical Sciences and Spatial Planning).
- **Maintain increase and diversify research income generation:** an extension of external funding sources to nine categories in the REF 2014 submission compared with seven in RAE 2008 has been achieved by strategic staff appointments, development of research collaborations to target selected areas and extension of work with industry and the policy community.

CEESR organises an Annual Lecture and a weekly seminar programme populated by invited international and national guest speakers and local researchers. There are additional research group-focused meetings and reading groups that provide the opportunity to discuss research proposals, preview conference presentations, discuss published literature and support early career researchers. The University supports the Unit in achieving its strategic objectives through a range of measures. These include sabbatical leave (11 during assessment period with an average 16.0% of total FTE on sabbatical at any one time), seed funding (7 in period) and timetable relief to develop funding bids, convert conference papers into journal articles and facilitate international and national research collaboration.

ii Future research strategy

Kingston University's 2008/09 – 2012/13 Strategic Plan states that it is "committed to research as a core part of its mission" and its "research strategy combines selectivity in targeting and supporting research excellence with a commitment to ensuring the existence of a sustainable research culture". CEESR's future strategy reflects the University's aim. The Unit's aim for the next five years is to build on existing strengths in Quaternary Science, especially Environmental Geochemistry and Palaeo-environments, the people-environment interface, population and lifestyles, and geodynamic and crustal processes and to enhance CEESR as an international multidisciplinary centre of excellence for research across the spectrum of geographical, earth and environmental sciences. Four objectives have been set to achieve this aim:

- Consolidate each group by appointing research active early career researchers and by sustaining an environment in which mid-career staff are able to attain promotion and to succeed to research leadership positions.
- Exploit the commercial and dissemination potential of the Unit's high quality research in order to achieve high levels of economic, social and cultural impact, both in terms of reach and significance (target: develop impact case studies for 25% of research carried out with major awards).
- Increase the level and sustain diversity of research funding from research council, industrial, charitable and overseas sources in Quaternary Science, mineralisation processes and people-environment interaction (target: 15% rise over next assessment period).
- Increase number of externally funded doctoral research students building on the success of researchers in the GCDP group and the rate of completions (target: 15% increase on 2009/10 figure and 80% qualification rate within 4 years of start of study (50% qualification rate and 9 years for part-time) by 2014/15).

iii Developmental priorities and organisation

A CEESR Research Committee with a membership of senior, mid-career and early career researchers manages the centre and monitors its strategic objectives. The Unit's developmental

priorities are coordinated by this Committee, notably its strong links with selected industrial sectors, practitioners and policy-makers, and academic partners. The Unit will develop regular Research Circle meetings with staff and external organisations including, for example, the National Physical Laboratory, the Radon Council, Natural England, English Heritage, the Greater London Authority and Surrey County Council. CEESR will co-organise joint seminars with colleagues in other Research Centres at Kingston University and HEIs within London and the South East on topics of mutual interest.

c. People, including:

i. Staffing strategy and staff development

The Unit's staffing strategy is based on recruiting, promoting and retaining senior and early career researchers of proven international quality or with clear potential to reach this level whose expertise is aligned with its research strengths and strategic priorities. Research support mechanisms aim to enable all staff to maximise their research potential.

Three staff submitted in RAE 2008 have since left for senior positions elsewhere (Robinson – Director: Centre for Regional Engagement of University of South Australia (2008); Clemens – Executive Head of Department of Stellenbosch University (2009); and Kim Jarvis – a personal chair at Imperial College (2009)). Blitz, who joined the Unit as Professor of Human and Political Geography in 2009, made a significant contribution towards refocusing the PPE group before moving to a senior post elsewhere (Deputy Dean, Middlesex University) in 2013. Rankin retired during the assessment period (July 2010) and was appointed to an Emeritus position enabling the Unit to draw on his experience and industrial links established jointly with **Treloar**. A core group of five research active staff (**Jarvis, Smith, Treloar, Walford** and **Waller**) submitted to RAE 2008 give continuity to this submission together with five additional staff (**Brown, Hughes, Kelly, Miles** and **Middleton**). These appointments have helped to re-focus the PPE group and plan for succession in each group. All new staff irrespective of seniority are mentored by an experienced colleague in a cognate field, who assists with writing grant applications, publishing and building their research profile.

The University requires staff to undertake development and training courses related to research (e.g. in research student supervision and grant application writing). An annual round of promotion to professor or reader provides a career path for researchers and assists with staff retention in the Unit. Since 2008 there have been three promotions to professor (**Jarvis, Treloar** and **Waller**) and one to Reader (**Smith**). Excellence and relevance of research activity will continue to guide staffing policy over the next five years as the Unit develops its research community by providing opportunities for staff promotion and replacement.

ii. Research students

The Unit had 18.05 FTE doctoral research students at the start of the final year of the assessment period, giving 1.81 per FTE staff member submitted: these figures respectively represent increases of over 22% on the 15.0 FTE students and 108% on the 0.87 students per FTE staff member in 2007. At any one time approximately half of the doctoral students are part-time, including some based overseas who receive support from an approved external supervisor. Early career researchers are provided with supervisory experience that complements compulsory research supervision training from the Research Support Office. The Unit's links with industry, especially in the Geodynamics and Crustal processes area, have resulted in 12 co-funded studentships during the assessment period.

Research students undertake a programme of structured research training, with the University's Graduate School running full- and half-day training events in years 1, 2 and 3 of a standard three-year research degree. All students attend core elements in this programme in each year plus optional units as appropriate. This is audited through annual monitoring. These events are supplemented by workshops organised locally and by personal training provided by supervisors, technical staff and funded external training if required, for example in specific analytical techniques or software. Research students are fully integrated in CEESR through research group membership: they attend group meetings and conferences, and engage with the wider research community.

An annual review scheme developed by the University Graduate School includes initial monitoring in year 1 involving a progress report and a mock viva with an independent member of staff that, if successful, leads to confirmation of PhD registration, and annual monitoring in subsequent years. Research students also present their research to CEESR at least twice: in their first year their seminar forms one element in the initial monitoring process; and their seminar in the final year provides training for conference presentation and viva voce examination. A Postgraduate Tutor oversees these arrangements and chairs three formal meetings with research students per annum.

The Graduate School provides a University-wide focus for research student activity, including dedicated ICT facilities, meeting rooms and social space. The creation of a Doctoral School across a number of cognate units has provided a focus and home for research students, providing opportunities for training that complement the courses provided by the Graduate School and the infrastructural support provided by CEESR. Nine doctoral students have commenced their research supported by studentships from the University through a competitive process. CEESR research students occupy two shared offices in close proximity to staff offices and research laboratories.

There is a strong emphasis on joint publication by research students and associates, and supervisory staff. Directors of Study and their completed PhD students have obtained bridging funding in competitive bidding processes to create an opportunity for writing joint publications and grant proposals (seven awards granted): this forms part of the strategy aimed at developing early career researchers' careers. Nine submitted outputs have been co-authored with research associates or students and demonstrate the supportive research culture and exemplify implementation of the Concordat to Support the Career Development of Researchers.

d. Income, infrastructure and facilities

i Income

The combined income to the Unit is approximately £1.13 million and originated from a range of sources as befits research spanning Human and Physical Geography, with 30% from research councils (ESRC, NERC and British Academy), 29% from overseas industry and 19% achieved in competitive tender from UK-based charities.

Notable income portions of competitively-won grants allocated to the current assessment period include those from the US Dept. of State (£110K), UNESCO (£10K), ESRC (£142K), NERC (£141K), British Academy (£29K), Leverhulme Trust (£202K), Royal National Lifeboat Institution (£13K), Statoil Norway (£82K), Maersk Oil (£24K), Randgold Resources (£224K) and European Goldfields (£24K). Grants in-kind were from NERC (£169K).

Using these and other awards, CEESR has employed seven Postdoctoral Research Associates on externally funded projects since RAE 2008.

ii Research support infrastructure

Investment by the University in the research support infrastructure has enhanced assistance with funding opportunity alerts, writing and costing grant applications, and managing research awards pre- and post-application.

The Unit has in place procedures to encourage and support researchers, including research students, to submit appropriately resourced and managed grant proposals with mentoring provided by research group leaders and other senior staff. Internal review and scrutiny systems are designed to raise the quality of research proposals.

University funding has been competitively targeted towards key areas for development, and support secured by the Unit from this source has been primarily directed towards achieving the strategic objectives of appointing early career research staff, targeting Human Geography, and supporting sabbatical leave. Two ECR appointments were made after 2008 and a further ECR post in Geodynamics and Crustal Processes was converted into an established position.

iii Facilities and equipment

New space and facilities funded by the University have enabled CEESR to develop its dedicated research space for staff and students. Expenditure on analytical facilities and equipment has built on previous investment, and amounted to £411k over the assessment period.

Major items obtained during the period support work in Physical Geography, Geographical Information Systems and Earth Science, and include a Renishaw inVia laser Raman Spectrometer £12k, Gold X-ray Fluorescence Analyser £24k, Geomatrix field spectrometer £9k (together providing field-based analytical capability for existing and future research), Logitech £53k (thin section preparation), Agilent ICP-MS spectrometer £85k and ICP-AES and Radon Monitor £100k (quantification of elemental pollutants), Leica Scanstation 2 System with GPS £90k for collecting terrain data sets.

These equipment and facilities have contributed directly to outputs produced by **Jarvis** (#2 and #3), **Smith** (#2 and #4) and **Treloar** (#3 and #4), and to success in research funding applications (Jarvis and Treloar). A Technical Manager, a cartographer, a thin section technician and four laboratory technicians service the Unit's specialist areas.

e. Collaboration or contribution to the discipline or research base

The University and Unit promote and support an ethos in which all staff engage with the wider academic research community, industry and professional organisations through collaborative activities, appointments, committee work and editorships. Unit researchers undertake these roles across the broad spectrum of Physical and Human Geography as well as with cognate disciplines in the Earth and Social Sciences and are connected with a diverse range of collaborators, learned societies, industry, government and other organisations.

The reputation of the Unit's researchers in the academic, commercial and professional communities is evidenced by the range of sources from which research funding is obtained, collaborations with international and national HEIs, industry and commerce and the diversity of roles that they perform within the discipline and research base.

Senior and early career researchers participate in these activities at international and national levels through work on committees, involvement with learned societies, developing collaborative partnerships, participating in interdisciplinary research, accepting peer review panel invitations and taking on editorial responsibilities.

The following summary under a series of sub-headings highlights the diversity and extent of the Unit's commitment to engaging with the international and national research community within and beyond academia and the personal awards, funding and recognition received as a result of these endeavours.

Development of the discipline

The Unit's researchers contribute to the development of the discipline by publishing their work in the top ten Physical and Human Geography journals (each set ranked according to frequency of outputs in RAE 2008), as well as in other publications. **Brown** (output #2) contributed to the fields of environmental monitoring and assessment, **Smith** (output #2) and **Walford** (outputs #1 and #3) to Remote Sensing and Geographical Information Systems, **Jarvis** (outputs #1 and #2) and **Treloar** (outputs #1 and #4) to mineral and petroleum exploration, **Middleton** (outputs #2 and #3) and **Walford** (output #2) to urban living and lifestyles, and **Smith** (output #1) and **Waller** (outputs #1 and #3) to Quaternary Science.

Research dissemination and publication

The Unit's researchers take on leading roles in relation to dissemination and publication in the discipline by acting as Editor-in-Chief, Associate Editor, Guest Editor and sitting on the editorial boards of a range of journals.

Notable examples are the *Journal of Maps*, whose publication recently transferred to a commercial publisher (Taylor and Francis), editing of a special issue of the *Journal of Environmental*

Management entitled Microbial and nutrient loadings in fresh and coastal waters, Environmental Archaeology and the International Association of Sedimentologists Special Publications.

Conference organisation and hosting

The Unit's researchers also contribute to developing the discipline by organising and convening sessions in international and national conferences.

One significant example is the International Geoscience Programme (IGCP) *Project 571: Radon, Health and Natural Hazards*, which connects the Environmental Change group in the Unit with researchers in France, India, Poland and Taiwan and has organised a series of thematic meetings for the European Geosciences Union in Vienna in each year of the REF 2014 assessment period.

Sessions convened by researchers from the Environmental Change group at the *18th International Sedimentological Congress* (Mendoza 2010) and the *28th International Association of Sedimentologists Meeting* (Zaragoza 2011) provide additional important examples of conference organisation.

There are two notable examples in relation to People Place and Environment group. First, a researcher co-convened the *Britain on the Move* conference held at the RGS-IBG in London December 2012, which marked the 20th anniversary of the seminal two-volume Belhaven Press texts *Migration Processes and Patterns* (Champion and Fielding 1992; Rees, Stillwell and Boden 1992). The second relates to a PPE researcher, who was involved with the *1st British-French Rural Geography Symposium* in September 1989, co-organising with French colleagues the 6th such meeting in Colchester 2010.

A noteworthy illustration of the researchers in the Unit contributing to conferences in Mineralogy relates to membership of the Organising Committee of the *European Mineralogical Conference* (Frankfurt 2012)

Invited/keynote presentations

The Unit's researchers have been invited to deliver keynote presentations at international and national conferences and symposia across the spectrum of research areas represented in the Unit.

Notable examples relating to Human Geography are invitations to present research on rural population dynamics at the *Space to Place: The Next Rural Economies Workshop* (Prince George, Canada 2008) and on historical GIS research at *Locating the Past – Gerald Aylmer Seminar* (London 2012) organised by The National Archives, Royal Historical Society and Institute of Historical Research.

Climate change research in the Unit has resulted in invitations to researchers from the Environmental Change group to give papers at *Climate and Ocean Dynamics of the Cretaceous Greenhouse World Symposium* (University of Utrecht 2011) and *Landscapes or Seascapes? The History of the Coastal Environment in the North Sea Reconsidered* (Ghent 2010).

The majority of established researchers in the Unit have been invited to contribute to seminar series in nine British HEIs during the assessment period.

Membership of peer review bodies, research committees and learned societies

Notable examples of the Unit's researchers contributing to the assessment and evaluation of research include membership of the ESRC and NERC Peer Review Colleges (since 2010 and 2011 respectively) and acting as reviewers for the European Union Framework Programme 7 (2009, 2012 and 2013), the Belgian Fund for Scientific Research (F.R.S.-FNRS) (2011 to present) and the Danish Council for Independent Research, Natural Sciences (2009 to present).

Significant examples of the Unit's researchers being invited to join working groups or evaluation panels include the Thomson-Reuters Working Group on Citation Metrics (2010), the British Society for Geomorphology's Interactive Geomorphological Map of United Kingdom Working Group (2010) and the Doctoral Program Plus in GIS Review Panel, University of Salzburg (2010).

National/international committee work

Researchers in the Unit hold a range of positions on national and international committees for learned societies and other types of organisation. Important examples include President (2007-09) and Vice-President (2009-) of the Sedimentology, Stratigraphy and Palaeontology Division of European Geosciences Union, Vice President of Mineralogical Society of Great Britain and Ireland (2011-12) and chair of the Romney Marsh Research Trust (2005-11).

International and national research networks and collaboration

Researchers are connected with different sub-disciplinary fields relating to the research strengths of the Unit through international and national networks and collaborations.

Leadership of the UNESCO *IGCP 571 - Radon, Health and Natural Hazards* project brings about collaboration with researchers in Dev University India, the Institute de Physique de Globe de Paris (IPGP), University of Paris, Wroclaw University Poland, the University of Taiwan and the European Geosciences Union. This project also links with the NMS Airborne Radioactivity Monitoring Users' Group (ARMUG) at the UK National Physical Laboratory (NPL).

There are strong links with industry and academic collaborators in relation to oil and mineral exploration including Maersk Oil Denmark, Petroleos de Venezuela Sociedad Anónima (PDVSA) Venezuela, Statoil Norway, Tethys Petroleum Tunisia, BMR Germany, Goethe-Universität Frankfurt, Czech Institute of Geophysics (Uličný), Czech Geological Survey (Čech), University of Warsaw (Walaszczyk), University of Western Ontario (Plint) and the University of Opole (Jagt-Yazykova).

Collaborations in respect of population dynamics and urban lifestyles research are with the Ascension Trust, local Street Pastor groups, AgeUK, the Pedagogical University of Krakow, Anglia Ruskin, Middlesex and Swansea Universities.

Quaternary Science and environmental change researchers connect with Wessex Archaeology, the Natural History Museum, the Geological Survey of Belgium and the Universities of Durham, Hull and Portsmouth.

Formal knowledge exchange collaborations have taken place with Mouchel, Halcrow, Natural England and the Environment Agency.

Research-based awards and honours

Two notable examples of awards and honours to researchers in the PPE group in the Unit are the Visiting Research Fellowship in the Urban Research Centre, University of Western Sydney (2008) given to **Middleton** and the prestigious Senior Research Fellowship awarded to **Walford** by The British Academy and Leverhulme Trust (2012-13).