

Institution: University of the West of England
Unit of Assessment: 16 Architecture, Built Environment and Planning
<p>a. OVERVIEW</p> <p>The University of the West of England's Architecture, Built Environment and Planning research is undertaken in three Research Centres: The Centre for Transport and Society (CTS); The Centre for Sustainable Planning and Environments (SPE); and The Construction and Property Research Centre (CPRC). In addition, within SPE, is the World Health Organisation Collaborating Centre for Healthy Urban Environments (WHO CC). Thirty three staff are submitted. The Centres are in the Faculty of Environment and Technology (FET), in two Departments. <i>SPE</i>, the <i>WHO CC</i> and <i>CPRC</i> are in The Department of Architecture and the Built Environment, and <i>CTS</i> is in the Department of Geography and Environmental Management. The Research Centres are affiliated to the <i>Institute for Sustainability, Health and the Environment (ISHE)</i>, a cross-University Institute set up in 2009 to build on the University's research strengths and foster trans-disciplinarity. The Research Centres remain unchanged from RAE 2008, except <i>SPE</i> was formed in 2009 by amalgamating <i>The Centre for Environment and Planning</i> and <i>The Cities Research Centre</i> to better integrate our urbanism and governance research.</p>
<p>b. RESEARCH STRATEGY</p> <p>UWE's Architecture, Built Environment and Planning research strategy is founded on a collective commitment to build on our RAE 2008 achievements, where half of our submission was rated 3*/4*. Our understanding is that global challenges in the built environment, around transport and mobility, sustainable urban environments, building design, urban governance, healthy cities, construction, property, and climate change, are best approached through a combination of fundamental research and applied enquiry. Central to this is a recognition of the value of multi- and trans-disciplinary advances in knowledge. Since 2008, the Unit's strategy has been:</p> <ol style="list-style-type: none"> 1. to enhance the <i>quality</i> of our research in terms of outputs, impact and activities; 2. to respond to the <i>demands of policy and practice</i> in a creative and constructively critical manner; and 3. to <i>combine disciplines and perspectives</i> to challenge and advance orthodox thinking. <p>This strategy has been implemented via a range of measures, including successful bidding and internal investment. After RAE 2008, UWE identified 'Sustainable Transport and Planning' as one of its five areas of 'international research excellence, strength and vitality' and invested £1.2 million predominantly in staff, doctoral bursaries and projects led by Early Career Researchers (termed SPUR awards, averaging £15,500). The Strategy is also delivered via effective research support and staff development (see c. People). The Unit's achievements in the three objectives are evidenced by securing prestigious research funding, delivering high quality outputs, and providing significant insights for policy and industry. Our headline achievements are given below, followed by summaries for each Centre.</p> <ul style="list-style-type: none"> • Income to the Unit of £7,769,503 (2008-2013 inclusive), from 168 externally funded projects with a total value of £47m (including 16 EC, 19 RCUK, 76 Govt.) • 44% increase in RCUK income since 2008 • 73% of projects undertaken with external collaborators • 231 refereed journal articles by the submitted staff • 28 significant policy guidance reports, tools, and methods for major clients in the sector e.g. for World Bank, OECD, DfT, Environment Agency, CLG, DECC, DEFRA, CIRIA • Major advances in our multi-disciplinary research with significant RCUK and EC funding, and the new <i>Institute for Sustainability Health and Environment</i> • High status external designations: e.g. Framework agreement with DfT, WHO Collaborating Centre for Healthy Urban Planning, NICE Centre of Excellence for Spatial Planning and Health, Constructing Excellence South West Hub • More than doubling PhD completions since 2008 (from 11 to 31) • 26 positions held as Expert Advisors on international and national Expert Groups, Standards Boards, Committees and Review Panels • £7.5 million investment in a new building (BREEM Excellent) for Built Environment staff

CENTRE FOR TRANSPORT AND SOCIETY: *Prof Graham Parkhurst (Director from 2010), Prof Glenn Lyons (Director 2002-2010), Prof John Parkin, Associate Prof. Kiron Chatterjee, Dr Juliet Jain, Dr Caroline Bartle (ECR), Dr Steve Melia (ECR), Dr Miriam Ricci, Ian Shergold, 9 PhD students and two Visiting Profs (Stephen Atkins and Adrian Davis)*

CTS is one of the leading transport research centres in the UK and internationally. It has furthered understanding of the key interactions between **mobility, lifestyles and society, in the context of technological change**. It has secured £2,594,232 research funding, including 4 EPSRC, 2 ESRC, 2 MRC, 2 EC, 25 Government, and 2 industrially funded grants (see d). It held a framework contract for social research for the DfT (in collaboration with a national market research company) leading to 12 projects which influenced debates on attitudes to transport, road safety and road pricing. CTS has advanced research in seven key themes:

1. **Car dependence:** research on the relationships between transport and spatial planning has shown: the importance of transport in housing location choice; factors influencing car ownership decisions; and the potential for car-free development and shared space (*Melia, Chatterjee, Parkhurst, Shergold, Lyons*, funded by DfT, EPSRC, Ito World Ltd).
2. **Experience of the travel environment:** new understandings of the travel experience and its impact on quality of life and economic productivity, showing that: rail (and bus) travel time is used productively, with implications for transport appraisal and high-speed rail policy; and mobile ICTs are important in the journey environment, informing policy and practice, e.g. on transport service provision, vehicle and terminal design, and the economic evaluation of travel time (*Jain, Lyons, Parkhurst, Atkins*, funded by DfT, EPSRC, TSB).
3. **Promoting inclusive, low carbon, active travel:** evidence on barriers and incentives for walking, cycling and shared mobility modes, including knowledge on new cycle hire schemes, and on cycling infrastructure (cycle network design), a novel methodology for cycle park counts, and the potential for social networks to enhance cycling (*Parkin, Chatterjee, Parkhurst, Melia, Bartle, Shergold, Davis*, funded by MRC, ESRC, DfT, NHS Scotland).
4. **Supporting and evaluating sustainable mobility strategies:** the effective evaluation of transport interventions e.g., the design of a research strategy for a panel survey of the behavioural effects of the Cycling City and Towns Programme, employer-focused behaviour change interventions, contextual evaluation of a novel hybrid bus technology, evaluation of the benefits of hybrid cars in car sharing schemes, and the effects of pedestrianisation (*Parkhurst, Chatterjee, Parkin, Ricci, Melia, Shergold*, funded by DfT, EC, West of England Partnership).
5. **Technologies and travel:** research on ICT innovation in the transport sector, identifying bottom-up, entrepreneur-led initiatives, and examining user-perceptions of novel transport systems (e.g. UltraPRT, introduced at Heathrow Airport) (*Lyons, Jain, Parkhurst, Ricci, Shergold, Bartle*, funded by DfT, EPSRC, ESRC, Traveline, TSB).
6. **Understanding and influencing attitudes and behaviours:** developing a body of knowledge around the theory of travel behaviour (*Lyons, Chatterjee*, funded by DfT, EPSRC).
7. **Mobility and the ageing population:** research on older people's mobility as a product of individual life courses and aspirations, providing new evidence on: transport's role in rural social exclusion; the importance of cars and driving; and new theories around mobility in older age (*Parkhurst, Shergold, Chatterjee*, funded by ESRC, MRC, EPSRC, Stagecoach plc).

CTS has invested in new staff (*Bartle, Melia, Parkin, Ricci and Shergold*). It has had 11 PhD completions, funded by GWR, MRC/ESRC and EPSRC, and given 4 PhD bursaries. Three of its staff (*Melia, Shergold and Ricci*) have received SPUR awards.

CENTRE FOR SUSTAINABLE PLANNING AND ENVIRONMENTS *Prof Katie Williams (Director), Prof Martin Boddy, Prof Robin Hambleton, Prof Rob Atkinson, Dr Michael Buser (ECR), David Littlefield (ECR), David Ludlow, Dr Katie McClymont, Dr Michael Short, Dr Stephen Hall, Dr Ian Smith, Craig White, 7 PhD students, 2 Visiting Profs (Sue Maddock and Nicholas Falk).*

SPE's research has provided new evidence on the **nature of sustainable urban environments, and how they can be achieved through planning, design and governance processes**. It has focused on defining and delivering places that are environmentally sustainable, socially just and economically competitive. SPE has secured £2,969,636 for projects funded by EC (12), EPSRC (3), AHRC (5), charities (6) and local authorities. Funding has been from major international and

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national Programmes (e.g. Living with Environmental Change, Bridging the Gaps, Connected Communities, Framework 7, ESPON, Foresight). It has advanced knowledge and responded to the needs of policy and practice in the following themes:

1. **Climate change and the built environment:** research on adapting cities for climate change: including new evidence on the climatic risks for different types of suburbs, and the best ways of adapting homes, gardens and public spaces, and on spatial requirements for adaptation features (*Williams, Smith, Hambleton*, funded by EPSRC, Govt Office for Science).
2. **Smart Cities:** research on ICT-enabled urban governance, helping to define planners' and other managers' requirements for data and tools, and translate these into ICT specifications for industrial partners (*Ludlow*, funded by EC).
3. **Knowledge for sustainable urbanism:** research on the role of knowledge and how different forms of knowledge are combined and used in relation to urban and spatial policies and projects, and to sustainability in cities (*Atkinson, Hall*, funded by EC).
4. **Design and heritage in the built environment:** new evidence on how design in historic environments is negotiated and conceptualised, refining notions of authenticity, identity, memory, and regeneration. Significant new work on design policy for tall buildings, and a review of CABE (*Short, Littlefield*, funded by DCLG/DCMS).
5. **Sustainable Building Design:** research and development of a sustainable prefabricated modular cladding panel technology (ModCell), and sustainable construction techniques in buildings, resulting in an award-winning demonstration building (BaleHaus) and low-carbon housing schemes (*White, Marco* [also in WHO CC], funded externally to UWE by TSB, DTI).
6. **Governance, democracy, place and leadership:** new insights on democracy, engagement and place, and how spatial development policy is articulated and evidenced. This includes the role of innovation in civic leadership and its impact on a city's prosperity and culture, using international comparisons. A new focus on the construction of spatial identities through arts-based activism has been developed (*Buser, Smith, Atkinson, Hambleton, Maddock* funded by AHRC, EC, DCLG, British Academy, JRF, Big Lottery, Capacity Builders).
7. **Regional studies: identity, attractiveness and governance:** new conceptualisations of 'the region' in the UK and the rest of Europe, providing comparative evidence on spatial identities, political representation, regional productivity differentials, regional governance in practice, and the interaction of wider structural factors and local capacities on urban and regional development (*Atkinson, Boddy, Smith, Buser*, funded by EC, IDEA, WA Govt, SWRDA).
8. **Planning and development processes and outcomes:** research on fiscal incentives and policies (including enterprise zones) and economic restructuring, planning processes, including public participation, the politics of development control and the nature of contemporary planning as a profession (*Hall, McClymont*, funded by British Academy).

SPE has invested in new staff (*Buser, Hall and McClymont*). It has had 11 PhD completions, funded by GWR and ESRC, and awarded 4 PhD bursaries. Two staff (*Buser and McClymont*) have been awarded SPUR grants.

THE WORLD HEALTH ORGANISATION COLLABORATING CENTRE FOR HEALTHY URBAN ENVIRONMENTS: *Associate Prof Marcus Grant (Deputy Director), [Prof Gabriel Scally is Director: he is a Public Health Professional, so not included in this submission], Dr Laurence Carmichael, Elena Marco, and three Visiting Profs (Hugh Annett, Herbert Giradet, Richard Guise)*

WHO CC is formally recognised as a 'collaborating centre' by the World Health Organisation Regional Office for Europe. It has undertaken research and provided training on **healthy urban planning and sustainable neighbourhoods, and developed tools to support stakeholders in these fields**. It is linked to a network of 100 cities, and 10 national networks of cities from the EU and Eastern Europe through the WHO Healthy Cities Networks. It has had funding totalling £794,222, mainly from Government (17 projects), charities and NGOs, and is the designated NICE Centre of Excellence for Health and Spatial Planning. It has focused on the key theme of:

Integrating health into the planning system: Research has reviewed the progress of the healthy cities movement across Europe, and assessed the integration of health into the planning system through 6 systematic reviews for NICE. The team has demonstrated best practice in the processes of integration, such as the 'health practitioner in residence' scheme.

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Researchers have developed new tools (e.g. the SPECTRUM decision support tool for new developments, and the 'Health Map', used globally to conceptualise the wider determinants of health) (*Grant, Carmichael, Marco*, funded by WHO, NHS SW, EC, CEBE).

WHO CC has invested in staff (*Carmichael*), and *Marco* received a SPUR award.

CENTRE FOR PROPERTY AND CONSTRUCTION RESEARCH: *Asst. Prof Colin Booth (Director from 2011) (previously Prof Sun, now at Heriot-Watt), Prof Lamine Mahdjoubi, Prof Paul Olomolaiye, Prof Lukemon Oyedele, Prof David Proverbs, Dr Jessica Lamond, Dr Graham Squires, Dr Adrienne Tomor, Dr Kwasi Baffour Awuah (ECR), 11 PhD students*

CPRC has **developed and applied integrated and innovative solutions to technical, social and economic problems that relate to the creation and management of buildings. It has also furthered knowledge on the contemporary operation of property markets**, in the UK, USA and developing countries. CPRC has secured £2,137,627 in funding (13 Govt funded projects, 3 RCUK, 1 EU). The Centre hosted the Constructing Excellence South West and Future Foundations initiatives, which involved working with over 200 construction industry partners in the region to identify and embed best practice in sustainable construction. With the arrival of *Proverbs, Booth and Lamond*, CPRC has developed a new specialism in the **impact of flooding on property** (securing participation in two EPSRC-funded consortia). CPRC's research has contributed to the following themes:

1. **Construction management:** research has focused on bringing about an improvement in the performance of construction companies, contemporary challenges for construction managers, and cultures of construction project organization. Insights have been developed on actors' motivations in building projects, and on site-specific health and safety issues (*Proverbs, Oyedele, Olomolaiye, Booth*, funded by RICS, Liverpool CC, HEA).
2. **ICT in the built environment:** new insights on the use of different forms of ICT, including visualisations, simulations and multimedia in assisting the design and use of the built environment (*Mahdjoubi*, funded by Bristol CC, GOSW, Knowledge West, Natural England SW, Qatar National Research Fund and others).
3. **Housing and real estate:** research has focused on land markets and rights in developing countries, socially responsible property investment and the effectiveness of fiscal incentives to stimulate development (*Olomolaiye, Squires, Baffour Awuah*, funded by Fulbright, RICS).
4. **Climate change resilience in relation to the property sector:** new insights into: the measurement of the financial impacts of flood risks on households; the benefits of mitigation and adaptation to flood risk; incentives, constraints and behavioural factors affecting successful adaptation and mitigation; the costs of resilient reinstatement; and the role of the insurance industry (*Lamond, Proverbs, Booth*, funded by EPSRC, TSB, RICS).
5. **Masonry arch bridges:** a specialism in the performance of brick masonry (especially fatigue and creep deterioration processes and behaviours) in relation to arch bridges (*Tomor*, funded by EPSRC and the International Union of Railways).

CPRC has invested in new staff (*Lamond, Baffour Awuah, Booth and Proverbs*). It has had 9 PhD completions, and awarded 3 PhD bursaries. *Squires* and *Lamond* were awarded SPUR grants.

COMBINING DISCIPLINES AND PERSPECTIVES: EVIDENCE OF ACHIEVEMENTS IN MULTI- AND TRANS-DISCIPLINARY RESEARCH

Each Centre has **exemplars of multi- and in some cases trans-disciplinary research**, e.g. *CTS* around older people's travel, (with clinicians and gerontologists); *SPE* on ICT in urban planning (with computer scientists, political scientists and geographers); and *CPRC* on new approaches to flood risk management (with hydrologists, economists, engineers and social scientists).

We have also achieved a **step-change in our experience of, and expertise in, trans-disciplinary research across 'health, environment and technology' disciplines, via the HEAT@UWE Programme** (led by *Williams*, funded by EPSRC, Bridging the Gaps Programme, £548,000). Over 150 staff took part in a 3-year Programme of events including 18 start-up projects (£130,000), 'heating-up' events on flooding, food, and behaviour change, and workshops and networking events. Successful projects were completed on: pervasive gaming on public transport; behaviour change and urban agriculture; space in the sustainable healthy home; health appraisals

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in development projects; and mapping spaces of participation. The programme has led directly to new externally-funded grants of £755,000 to date.

UWE has also made **organisational changes to support trans-disciplinarity**. It set up *The Institute for Sustainability Health and the Environment*, chaired by Sir Jonathan Porritt CBE, to facilitate multi-disciplinary research and act as a market-facing entity, brokering collaboration between researchers, industry, policy makers and users. ISHE encompasses 11 Research Centres and groups (including all Centres in this submission) and has engaged with a broad range of external stakeholders (see Impact Template).

The Unit's **reputation and expertise for inter-disciplinarity has also been recognised externally**. For example, *Lyons* was appointed RCUK Director of: the £5M, trans-disciplinary Transport Grand Challenge Sandpit 'Changing travel behaviours' in 2010; and the first £1.5M full-scale Creativity Greenhouse (virtual Sandpit), 'Achieving work-life balance in a digitally dependent world' (2012). Other **staff have had significant successes at multidisciplinary RCUK 'sandpit' events**: *Jain*, EPSRC, on domestic rituals and ICT support; *Lamond*, EPSRC, on flooding and socio-economic and physical systems, and *Buser*, AHRC, on cultural activism.

THE UNIT'S STRATEGY FOR THE FIVE YEARS FOLLOWING SUBMISSION

We plan to sustain and improve our performance in line with our existing strategic aims, with some areas identified for specific action:

- **To continue to invest in, and develop our internationally excellent research, in terms of outputs, impact and reputation.** We will concentrate investment in the most talented researchers and high-quality research themes. We will monitor outputs to ensure we continue to deliver 3*/4* quality. We will continually share best practice within and between teams, and benchmark our quality against internal and external indicators and metrics.
- **To develop our multi-disciplinary and trans-disciplinary research.** We will seek to continue our upward trajectory in advancing trans-disciplinary research by securing further external funding e.g. for co-supervised PhDs, methodological and theoretical advances, and supporting emerging collaborations.
- **To improve the quality of our research students' outputs.** We plan to build on the success achieved in improving the quality and quantity of PhD provision. We will reduce completion times and focus on improving the quality of outputs, co-authored with staff through peer review, mentoring, and integration within Centres.
- **To pursue a pro-active impact and advisory strategy, capitalising on our track record and existing reputation in this area.** The researchers in this Unit are lead players in national and international academic debates, networks, organisations and expert panels (see e. below). We will sustain this by investing in time and costs of pursuing such activities, and seeking external funding for them.

c. PEOPLE

STAFFING STRATEGY AND STAFF DEVELOPMENT

Since 2008 we have focused on **recruiting, retaining and promoting talented researchers**. Our aim is to cultivate teams of enthusiastic and committed staff who work together to develop and deliver their Centre's objectives, while having the freedom to pursue new interests and collaborations, and push academic boundaries. The previous RAE period **saw significant growth in research-active staff at all levels**, including the recruitment of new research leaders (*Williams, Lyons, Parkhurst*). In this period, we have sustained and evolved three viable Centres by **concentrating resources in areas of research excellence**. An **explicit aim of our recruitment strategy was to draw staff with high quality research track records and the ability to engage in multi-disciplinary research**. Hence we have invested in new researchers in emergent, cross-cutting areas such as: **place based activism** (with links to arts: *Buser*), **energy futures** (with links to history and science communication: *Ricci*), **the impact of flooding on property** (with links to psychology and geography: *Lamond* and *Proverbs*); **planning theory** (with links to economics and sociology: *Hall, McClymont*) and **ageing and mobility** (with links to gerontology and ICT, *Shergold*). Our new appointments include a psychologist, statistician, soil scientists, transport engineer and ICT consultant, each invigorating existing teams. We have also focused on **providing support for existing staff and ensuring promotion**. We have appointed high calibre PhD students (*Buser, Melia, Bartle* and *Baffour Awuah*), and promoted *Carmichael* and *Littlefield*

(to SL), *Buser* and *Shergold* (to RF), *Marco* (to PL), *Jain* (to SRF), *Grant*, *Booth* and *Chatterjee* to Associate Professor, and *Parkhurst* to Professor. Staff are supported through the structures and mechanisms outlined below:

RESEARCH MANAGEMENT AND SUPPORT STRUCTURES

Overall responsibility for research strategy and staff development lies with the **Associate Dean, Research and Knowledge Exchange**. In 2011, each Department appointed an **Associate Head: Research (AHoD)** to provide strategic direction across the Centres, and for staff not in a Centre. **Centre Directors** have responsibility for running their groups, including staff development. Each Centre also has **Visiting Professors** on 3-year appointments who collaborate on international networks, teach and advise on Centre Strategy. The Faculty has a **Research and Knowledge Exchange Committee**, responsible for research policy and strategy, including Centre Directors, AHoDs Research, and representatives of the Graduate School, research staff and PGR students. There is also an informal **Research Management Group** of research leaders which meets regularly to discuss academic and operational matters. Research Student progress is monitored through the **Research Degrees Committee** (see below). All staff are supported by the **Research Office** which deals with administrative, financial, and contractual issues. Each Research Centre has dedicated **administrative support**. Additional assistance is provided by UWE's **Research Business and Innovation Unit (RBI)**, which supports bid preparation and costing, and management of projects post-award. The Unit also has two dedicated **technical support staff**, to assist with graphics, reports and other media.

STAFF DEVELOPMENT: SUPPORT FOR RESEARCH ACTIVE STAFF, AND MAINTENANCE OF ACADEMIC QUALITY

Academic staff and students are supported in their varying requirements, as follows:

- All staff development needs are assessed formally on a bi-annual basis, through a **Personal Development Review**, and resources are then channelled into training, travel etc.
- All staff on research contracts are supported by the **Concordat to Support the Career Development of Researchers**. UWE received the **HR Excellence in Research Award** (from the EC in 2012) for its 'outstanding work in developing and supporting its research staff'.
- A **Researchers' Forum** provides a network for research staff to share good practice. It runs development events and ensures researchers are informed about career development matters.
- Within Centres, **academic quality is improved via a range of mechanisms including**: 'writing lunches' to review draft outputs; collectively agreed co-authorship policies; and partnered authoring between senior and early career researchers.
- RBI provides a programme of **staff development seminars in research, innovation and knowledge exchange** closely allied to the **Vitae Researcher Development Framework** (e.g. project management, getting published, bidding for funds, public engagement, use of social media, ethics, and the effective researcher).
- **Early Career Researchers** are supported by **SPUR awards**. Ten emerging researchers have been awarded £163,000 to undertake preliminary research and generate high quality outputs.
- The Unit utilises a **formal internal peer review process for all RCUK grants**, and **critical seminars and internal bidding rounds**, where staff receive feedback from senior academics.

EQUALITY AND DIVERSITY:

UWE respects the diversity of staff and students and enables them to derive maximum benefit and enjoyment from their roles. All managers are trained in equality issues. Successful implementation of good practice is evidenced by the diversity of our teams and the career development of our staff. UWE is the third highest ranked UK University in the **Stonewall Workplace Equality Index Top 100**; and a member of the **Athena SWAN Charter** committed to address gender inequalities in STEMM subjects. In addition, UWE provides the **Women Researchers Mentoring Scheme (WRMS)** which promotes equality and facilitates professional development for women researchers (5 staff in this unit have benefited from this scheme).

RESEARCH STUDENT SUPPORT

Our **PGR strategy to improve quality and quantity is evident in the support our students receive**. The National Postgraduate Research Experience Survey (2013) showed overall student satisfaction with our Faculty's Research Degree Programmes is **91.9%**, compared with **82%**

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nationally. Feedback to RAE 2008 noted that we had a 'relatively low rate' of completions per FTE. We have responded by implementing major changes, targeting prestigious funders for studentships, investing in UWE bursaries, increasing our entry standards, ensuring high quality supervisory support, and strengthening regular milestone checks. This has resulted in funding from ESRC/MRC, EPSRC, and GWR, and **more than doubling our completion rates from 11 to 31**. Our doctoral students are supported through their studies by:

- A partnership between a **University Graduate School** (formed in 2012), and **Faculty-based supervisory teams**, led by a **Director of Studies**.
- **A UWE Code of Practice for Postgraduate Research Study** (closely aligned to the QAA Code of Practice), which sets out support to PGR students.
- **A training and development programme**, which addresses many areas of the Vitae Researcher Development Framework (provided through the Graduate School).
- **Undertaking taught courses** to gain a broad base of relevant training and skills development. Students select from a range of M-level programmes, which equip them with expertise in, e.g. research methods, ethics, epistemology or specific techniques such as GIS or EIA.
- **Integration in a Research Centre**, which enables students to **contribute to research and teaching, gain from links with networks, and project partners and co-publish with colleagues**. Students present their work at conferences, including UWE's annual Doctoral Exchanges Conference. They attend peer-support activities such as the writing groups and seminars and enjoy a research-intensive environment with a vibrant intellectual culture.

d. INCOME, INFRASTRUCTURE AND FACILITIES

We have received **£7,769,503 income (2008-1013 inclusive)**, an average of **£42,179 per FTE per year**. Funding has been from Government (37%), Research Councils (28%), and EC (22%). This represents a 44% increase in our RCUK income, and an overall portfolio of 168 externally funded projects (including 16 EC, 19 RCUK, 76 Govt). We have attracted substantial funding in each of our Centres, with key grants as follows:

The **CENTRE FOR TRANSPORT AND SOCIETY** has secured: £585,000 from TSB/DfT/EPSRC (*Lyons*) for research on **User Innovation**; £309,623 from the EC (*Parkhurst*) for **Testing Innovative Strategies for Clean Urban Transport**; £152,690 from ESRC (*Chatterjee*) for research on **Life Transitions and Travel Behaviour**; £144,074 from EPSRC (*Jain*) from the **Sustainable Society Creative Greenhouse**; £171,000 from ESRC (*Lyons*) for **Transport and Technology**; £132,427 from DfT (*Chatterjee*) for an **Evaluation of Investment in Cycling**; £105,388 from ESRC (*Parkhurst*) for **Grey and Pleasant Land**; £91,192 from DfT (*Lyons*) for **Assessing User Experiences of Time Distance Place (road pricing) Demonstrations**; £75,655 from DfT (*Lyons*) for **Existing Evidence on Public Attitudes to Transport**; £70,061 from TSB (*Lyons*) for **Innovation in Rail** and £61,300 from MRC (*Chatterjee*) for **Applying the Life Course Approach to Cycling and Walking**. In addition, CTS was funded to undertake smaller-scale research for local authorities, Traveline, the Chartered Institution of Highways & Transportation, Commission for Rural Communities, Highways Agency, Age UK, and UK Energy Research Centre.

The **CENTRE FOR SUSTAINABLE PLANNING AND ENVIRONMENTS** has secured 8 RCUK, 12 EC and 21 Government grants and contracts, and 24 grants from 'other' sources, including industry. It secured £548,514 from EPSRC (*Williams*) for multidisciplinary research on **Health, Environment and Technology Research at UWE** (HEAT@UWE); £390,779 from EPSRC (*Williams*) for **Suburban Neighbourhood Adaptation for a Changing Climate**; £321,767 from the EC (*Ludlow*) for **Solutions for Governance and Policy Modelling**; £119,584 and £116,642 from the EC (*Atkinson*) for the **Small and Medium Sized Towns Project** and **Attractiveness of European Regions and Cities for Residents and Visitors**; £106,381 and £76,663 from the EC (*Ludlow*) for research on **Integrated Urban Management (Urban Nexus)** and on **Data Harmonisation and Service Integration**. The WHO CC has had funding from Government (17 projects), charities and NGOs. It secured £89,636 from the Department for Health (*Grant*) for **Built Environment Education for Healthier Settlements**; £45,045 for its collaboration with **Bristol Primary Care Trust**; and £32,835 from the EC (*Carmichael*) for **Planning Education for the New Challenges of Sustainability, Knowledge and Governance**.

The **CONSTRUCTION AND PROPERTY RESEARCH CENTRE** has had 13 Govt. funded projects, 3 RCUK and 1 EU. It secured £664,283 from the South West of England Regional

Development Agency (*Sun*) for **Constructing Excellence South West Future Foundations**; £260,877 from the TSB (*Sun*) for **Concept to Completion Design Tools for Sustainable Buildings**; £156,697 from EPSRC (*Lamond*) for **Delivering and Evaluating Multiple Flood Risk Benefits in Green/Blue Cities**; and £145,619 from EPSRC(*Lamond*) for **Clustering of Floods, Impacts on Resilience of Physical and Socio-Economic Systems**.

In terms of infrastructure and facilities, the **Research Centres are co-located in two linked buildings (Q and R blocks)**. *SPE*, *WHO CC* and *CPRC* are housed in adjacent open-plan offices. *CTS* is housed in shared office spaces in the same building. This co-location helps to facilitate inter-disciplinary working across the Centres, and embed students into the research culture. The Centres have benefited from **£7.5 million** investment in a **major new linked building: the 'R-block extension'**, which opened in 2010. It provides offices for research-active academic staff, and has been used to host, e.g. The UK Ireland Planning Research Conference and the ARCOM Roadshow and Workshop on Adaptation to Climate Change. The building incorporates innovative materials and construction techniques, which gained it a **BREEM Excellent** rating.

e. COLLABORATION OR CONTRIBUTION TO THE DISCIPLINE OR RESEARCH BASE

UWE's Architecture, Built Environment and Planning research makes a significant contribution to advances in theory, conceptualisation and practice.

The **CENTRE FOR TRANSPORT AND SOCIETY'S** key achievements are:

International contribution:

- *Lyons* is a member of the **US Transportation Research Board's Committee on Telecommunications and Travel Behaviour**; and has been an **International Evaluation Panel member for major research initiatives in Sweden and the Netherlands**.
- **18 invited lectures/keynotes** at, e.g. Using ICT to Increase Transportation Energy Efficiency (USA), Travel information for environmentally sustainable urban transport (Sweden); ITS European Congress (France), Our Common Future (organised by Volkswagen, Germany); Beyond the Fossil City (Turkey), and **40+ papers** given at the International Association of Travel Behaviour Research, the Transportation Research Board and the Royal Geographical Society international conferences.

National contribution:

- *Lyons* was a member of the **Expert Steering Group for the DfT's Futures and Horizon Scanning** activity, as part of the implementation process of 'Towards a Sustainable Transport Strategy'. He **chaired the national Universities Transport Study Group** and was the **RCUK Director of the £5M Transport Grand Challenges Sandpit 'Changing Travel Behaviours'**.
- *Parkhurst* was a member of the **DfT's 'Towards a Sustainable Transport System' advisory group**, and of its **Roads Reform Expert Group**. He also chaired **The Future of Local Transport**, in London, 2012.
- *Parkin* is a member of the **ICE Transport Expert Panel** and **ICE Cycle Working Group**.
- *Melia* was appointed to two **DfT/DCLG working groups** on transport guidance for eco-towns.
- *Ricci* led the ESRC-funded symposium **'Engaging the Public with Sustainable Energy'**.
- **CTS collaborated with DfT** (under the aforementioned Framework Agreement) and with numerous local authorities in key national sustainable mobility themes.

Editorial activities, and awards: *Lyons* (Board): *Mobilities*, *Transport Reviews*, *Journal of Transport and Land Use*; *Chatterjee* (co-edited special edition) *Transport Policy*; *Parkin* (Advisory Panel) *Proceedings of ICE journal*, *Municipal Engineer*. *Lyons* was awarded an honorary Transport Planning Professional qualification for his outstanding contribution to transport planning; *Parkin* was selected as Erskine Fellow, to study in Christchurch, New Zealand.

THE CENTRE FOR SUSTAINABLE PLANNING AND ENVIRONMENTS is a leading player in international and national advances in sustainable urbanism. Key examples are:

International contribution:

- *Ludlow* is a **Member of the EU Expert Groups on The Urban Environment and The Thematic Strategy on the Urban Environment**.
- *Atkinson* was an **independent expert to the EU Development Group**, advising the Polish Ministry of Regional Development on preparation of Poland's Presidency of the EU in 2011.
- *Hambleton* is **Founding President of the European Urban Research Association (EURA)**, a

network of scholars in 22 countries, and was **special advisor to the Royal Commission on the Governance of Auckland**, advising on civic leadership.

- *Williams* was appointed to the Board of the **International Urban Planning and Environment Association**, and to the **Expert Panel of Urban and Rural Development**, Formas (Sweden).
- **SPE members gave 16 keynotes, sat on 9 scientific committees, and gave 120+ papers at international conferences: e.g. AESOP, IUPEA and EURA.**

National contribution:

- *Williams* has written reports for two **Foresight Reviews: Land Use and The Future of Cities**, and was appointed to the **EPSRC's Strategic Advisory Team for Process, Environment and Engineering**.
- SPE hosted **The UK Planning Theory Conference**, 2011 and 2012, and **UK Ireland Planning Research Conference**, 2013.

Editorial activities, and awards: *Atkinson* (Editor) and *Hambleton* (Board) *Urban Research and Practice*; *Hambleton* (Series Editor) *European Urban Research*, Techne Press, Amsterdam; *Williams* (Board) *International Journal of Urban Sustainable Development*; *Hall* (Board) *Planning Practice and Research*. *Smith*: awarded Griffith University Visiting Fellowship Programme, to study climate change adaptation in Australia (2010).

THE WORLD HEALTH ORGANISATION COLLABORATING CENTRE'S contribution:

International contribution:

- *Carmichael* sits on the Commonwealth Association of Planners' **Healthy City Expert Group**.
- WHO CC **formally reports at the annual European WHO Business and Technical meeting, to over 100 cities in the network** (politicians and officers), and provides training and disseminates research three times a year to specialised 'healthy' cities.

National contribution:

- WHO CC is **NICE Centre of Excellence** on Spatial Planning and Health.
- *Grant* was appointed **Honorary member of the Faculty of the National Institute for Public Health Research**; and **Fellow of the Faculty of Public Health**. He gave keynotes to the Royal College of Physicians and the Core Cities health conference.
- **WHO CC was designated a 'National Treasure'** by The **UK Faculty of Public Health** (the body that governs standards for UK public health specialists).

THE CONSTRUCTION AND PROPERTY RESEARCH CENTRE has worked intensively with academic and industry partners to advance its research. Its key achievements are:

International contribution:

- *Mahdjoubi* is **President of the Board of International Making Cities Livable**, and has given **14 invited keynotes** at major conferences, e.g. in Bahrain, Saudi Arabia and the USA.
- *Oyedele* is a member of the **CIB (International Council for Research and Innovation in Projects), Netherlands Task Group: Clients and Innovation in Projects, and People in Projects** (2010+).
- *Proverbs* is Chair of the **International Conference on Flood Recovery Innovation and Response**.

National contribution:

- *Proverbs* is a member of the **British Standards Steering Group for the mitigation and recovery of flood damaged buildings**.
- **CPRC has undertaken major Knowledge Exchange collaborations**, including Constructing Excellence SW and Future Foundations (SWRDA and DTI); Centre for Constructing Excellence SW (TSB); and Constructing Excellence Demonstration Programme (TSB & Waycon Precast).
- *Olomolaiye* led the **West Midlands Centre for Constructing Excellence**, with oversight of KT Projects in excess of £15 million through the Wolverhampton-Telford Technology Corridor.

Editorial activities and awards: *Proverbs* (Editor) *The International Journal of Sustainable Development and Planning*, (Board) *CIOB Construction Annual Review*, *Disaster Prevention and Management*, *Structural Survey*, *Financial Management of Property and Construction*; *Mahdjoubi* (Guest Editor) *Architectural Engineering and Design Management*; *Odeleye* (Board), *International Journal of Project Organisation and Management*, *American Journal of Engineering and Applied Sciences*. *Squires* was granted a **2013 Fulbright RICS Scholar Award** to study at the University of California, Berkeley, USA.