**Assessment of First Seven Years 2010-2017**

**ProBE**

**CENTRE FOR THE STUDY OF THE PRODUCTION OF THE BUILT ENVIRONMENT**

**WESTMINSTER BUSINESS SCHOOL (WBS) AND THE FACULTY OF**

**ARCHITECTURE & THE BUILT ENVIRONMENT (fABE)**

**JUNE 2017**

**Directors:**

Professor Linda Clarke (WBS)

Dr Christine Wall (fABE)

**Deputy Director:**

Dr Colin Gleeson (fABE)

# 2.1 Background and Information

# Context

ProBE is a multi-faculty research centre, established in February 2010, between the Westminster Business School (WBS) and the School of Architecture and the Built Environment (SABE), now the Faculty of Architecture and the Built Environment (fABE). Founded on a coherent and persuasive theoretical perspective, a rich programme of research and related activities is being developed, including research projects, oral history, film, exhibitions, seminars and other events. fABE and WBS are uniquely placed for such a Centre, being adjacent to each other on the same campus in central London enabling integrated cross-Faculty research activities. ProBE seeks to be inclusive in nature, embracing those actively engaged through funded projects and publications in research falling within its remit. It forms an umbrella, providing a basis for research administration, a website, a forum for debate and discussion, and a focus for interdisciplinary and international activity related to the production of the built environment.

**Statement of Intent**

ProBE co-ordinates and instigates research into the planning, production, social processes and people creating the structures and spaces that frame the urban and rural built environment, nationally and globally. In building up a portfolio of projects and outputs and a committed team of researchers, ProBE seeks to be recognised as a distinct, original and even controversial unit, not afraid to research problematic issues and to develop theoretical approaches challenging existing orthodoxies.

**Objectives**

The core objectives are to:

1. develop a coherent body of research on social processes underpinning the production of the built environment
2. research problematic issues and develop unique theoretical approaches
3. develop interaction between academics, policy-makers, practitioners, employers and trade unionists in identifying and researching key issues
4. maintain a flexible interdisciplinary research environment that co-ordinates and develops ProBE’s research strengths, resources and commitment
5. develop the profile of ProBE within the UK and at European and global levels as a distinct, original and controversial unit
6. provide ProBE staff with opportunities for career development in a supportive working environment
7. integrate the work of ProBE into the University’s teaching and learning programme.

**Distinctiveness**

Key questions are raised when the production of the built environment is seen as a social process; these are addressed in ProBE’s projects and are critical to its future strategy. Investigations on the built environment focus on four key research areas:

* history
* education, training and professional development
* the construction industry and employment and labour issues
* the production of space, architecture, plans, masterplans and strategies

These are interrelated by a series of subsidiary research themes including:

* equality and diversity
* technical and social interfaces
* innovation, social and economic change.

These key areas of research are too often addressed through mono-disciplinary lenses, which tend to ignore or oversimplify the complex interactions with the production of the built environment. The unique strength of ProBE is that it brings these aspects together and allows the interrelationships to be studied. Researching these areas means engaging with theoretical approaches from: sociology; economics; material culture; the visual arts; philosophy; education; design; law; and oral, economic, social, labour and art history. ProBE’s programme is thus inevitably multi-disciplinary in both methodology and analysis, ranging from the use of texts, statistics, oral histories, film/video, maps and plans, photographic and other visual material. Its outputs too range from written publications, to seminars, visual and oral archives, exhibitions and films. There is currently no other Centre investigating the core research areas described above.

**Networks and Research Contacts**

Given the long history of work in this area by the two schools, WBS and fABE, a wide network of research contacts and trusted relations with research partners expert in the area have been established. Long-standing, reliable and valued research partners exist in ***Canada, Denmark, France*, *Germany, Netherlands, Norway, Poland, Spain*** and ***Sweden*** as well as in British universities, in particular the Universities of Manchester and Northumbria and Kings College London. Research Institutes are affiliated to the centre and keen to contribute to funding bids. ProBE is also closely linked to a number of networks, including:

* ***Britain at Work 1945-1990****:* a consortium of academics and practitioners based at the Bishopsgate Institute including: Royal Holloway; the universities of Swansea, Westminster, and London Metropolitan; the Oral History Society; Independent Working Class Education; the Scottish Oral History Centre; and the South Wales Miners Library.
* ***European Institute for Construction Labour Research (CLR):*** a network of 500+ members across Europe, which organises events and produces regular newsletters and book publications, based in Brussels, website[www.clr-news.org](http://www.clr-news.org), of which Linda Clarke is President and whose British office is based at UoW.
* ***The British Universities Industrial Relations Association (BUIRA)***, for which Linda Clarke organises regular London seminars, as well as assisting in organising events for its Industrial Relations History Study Group and whose annual conference was hosted at the University of Westminster in 2014
* ***The Construction History Society*** of which Christine Wall is a board member, trustee and editor of the Construction History Journal.
* ***The Oral History Society***, Christine Wall is a member of the editorial committee of the OHS’s official mouthpiece, the *Oral History Journal*
* ***London Hazards***, of which Linda Clarke is a trustee and on the editorial board.
* ***Green Jobs Alliance***, of which Linda Clarke is on the steering group.

**Social and Economic Impact**

The impact of ProBE’s work is enhanced through its dissemination via the various associated networks and through the inclusive events held to which practitioners, policymakers, employers, trade unions, academics etc. are invited. Dissemination is carefully planned to address current and critical policy issues and to attract key stakeholders. The current *ACW* project on *Climate Change and Work* and *VET4LEC* project on *Vocational Education and Training for Low Energy Construction* both involve a wide range of stakeholders and attract global attention. Of two recent projects, too, the *Leverhulme* has social impacts at both local and national level while the *European Commission Bricklayer Project* has had an international impact on the the development of policy related to the European Qualifications Framework. In the area of low energy construction and renewables, Dr Colin Gleeson is now a globally-recognised expert. ProBE has an established group of well-defined research users based on successful previous research projects including: the European Construction Employers Confederation (FIEC), the European Union of Building and Woodworkers (EFBWW), Sector Skills Councils (e.g. ConstructionSkills), Construction Employers Federations (e.g. ECA, ECIA, Construct), Trades Unions (e.g. Unite, GMB, UCU), Further Education Colleges, VET institutions (e.g. BIBB in Germany, ecbo in the Netherlands, CEREQ in France, Byggeriets Uddannelser in Denmark), Professional Bodies (RIBA, RICS, CIOB, CIPD, RTPI), construction firms and government departments. ProBE has developed particular close relations with trade unions and increasingly receives requests for capacity building. The Centre also has long-established contacts with academics and researchers in universities and research institutes throughout Europe and the world, including in Canada (York University, Toronto and Simon Fraser University in Vancouver) and Australia (Melbourne University).

**Membership**

|  |  |  |
| --- | --- | --- |
| **Full Members** | **Affiliate Members** | **External Affiliate Members** |
| Prof Linda Clarke  Prof Janet Druker  Dr Fernando Durán-Palma  Dr Colin Gleeson  Dr Hugh Goodacre  Dr Aletha Holborough  Will McLean  Dr Suzy Nelson  Dr Melahat Sahin-Dikmen  Dr Christine Wall | Prof Nick Bailey  Prof Mark Clapson  Prof David Dernie  Prof Richard Harding  Elisabeth Michielsens  Prof Marion Roberts  Dr Sylvia Snijders  Prof Fred Steward | Dr Nick Beech, Oxford Brookes University  Dr Paul Chan, University of Manchester  Richard Clarke  Dr Ian Fitzgerald, University of Northumbria  Prof. Joern Janssen, CLR, and former Fachhochschule Dortmund  Dr Valerie Francis, University of Melbourne  Dr Kim Moody  Dr Olivia Muñoz-Rojas, Paris  Prof Steve Jefferys |
| **Affiliate Organisations**  European Institute of Construction Labour Research (CLR)  Britain at Work (B@W) network | | |

**Advisory Committee**

ProBE has an Advisory Committee, drawn from its members and from long-standing research partners, key practitioners and experts who advise on its strategy and also represent and liaise with the research users. They include:

* Fran Bradshaw, Anne Thorne Architects
* Steve Brawley, Joint Industry Board for Electrical Contracting Industry
* Frank Duffy, DEGW
* Tim Fenn, Oakwood Builders
* George Fuller, UCATT member
* Andrew Rabeneck, independent researcher
* Dr Fred Sherratt, Anglia Ruskin University
* Stef Stefanou, former Chief Executive of John Doyle Construction
* Kevin Williamson, Unite
* Dr Tessa Wright, Queen Mary University

**Staff Resources**

At the present time ProBE has no administrative support and all activities are managed and administered by:

* Prof. Linda Clarke, full-time
* Dr Christine Wall, Reader, 0.5
* Dr Colin Gleeson, Reader, full-time
* Dr Melahat Sahin-Dikmen, Research Fellow, 0.8

**Financial Statement**

Research Income Generated 2010-2015:

* *Inclusive Vocational Education and Training for Low Energy Construction,* European Commission project led by European Construction Industry Federation (FIEC) and European Federation of Building and Woodworkers (EFBWW), with 10 country partners (Belgium, Bulgaria, Finland, Germany, Hungary, Ireland, Italy, Romania, Slovenia, Spain), external expert (Prof. Linda Clarke, Dr. Colin Gleeson, Dr Melahat Sahin-Dikmen), €55,000, January 2017-December 2018.
* Strategic Research Investment Fund Grant.Phase 4 Excellence with Impact 2017/18:*Varieties of Collective Action and Organisation by Precarious Workers in Latin America: A Comparative Study of Chile, Argentina and Peru*. Fernando Duran Palma with Linda Clarke as co-applicant.
* *Housing and Labour: a pilot oral history of post-war council house building in England and Scotland,* £23,750, led by Christine Wall, with Linda Clarke as co-applicant and Melahat Sahin-Dikmen as research fellow, awarded as part of University Strategic Research Fund, Phase 3, began December 2016 to be completed July 2017
* *“Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective”*, Canadian Social Sciences and Humanities Research Council Partnership Grant for $2,547,130.00 (plus a further $2.2 million in matching funding and contributions from partnering organizations), seven-year international research project, led by Professor Carla Lipsig-Mummé, professor of work and labour studies in York University’s Faculty of Liberal Arts & Professional Studies, Toronto, awarded August 2014, with Professor Linda Clarke (WBS) as Associate Director, and steering group member and, as with Dr Colin Gleeson (fABE) and Prof Fred Steward, co-applicant. The project includes 38 individual members and 19 partners, one of which is UoW, in four countries. For UoW, this includes:
  + *Baseline report,* submitted January 2016, with papers on ‘Policies and practices to promote work enhancing pathways in the transition to a low carbon economy: Europe’ and Labour Unions and Green Transitions in the US’, $10,500
  + *Green Transitions in the US and Europe,* With Fred Steward (PSI), $20,000, 2016/7
  + *International Policy Group Working Group operations stipend,* 2016/7, $10,000
  + *Green Transitions in the Built Environment,* led by Colin Gleeson (fABE), $26,500 (Total $47,000), awarded October 2016, for completion November 2017.
* *Architecture and Building Labour: using oral and visual evidence to enrich policy and practice in the built environment,* £23,750, led by Christine Wall with Linda Clarke as co-applicant, awarded as part of University Strategic Research Fund, Phase 2, began January 2016, completed July 2016
* *Wage Analysis in Globalisation faced by Europe (WAGE),* partner in proposal for a network, submitted by Prof. Michel-Pierre Chelini, Artois University, €50,000, November 2015 to March 2017
* *Woodberry Down,* Suzy Nelson and Jane Lewis (London Metropolitan University) in collaboration with the residents' association (Geoff Bell), 2017-8
* *‘Raising the bar’ for the representation of women in the construction workforce,* Thames Tideway Tunnel (TTT) project, from September 2014, £26,200 till January 2015 with University of Loughborough as subcontractor.
* *Blacklisting Claims*, Report on construction wages since 1968 in response to: ‘Instructions to Experts’ (Professor Linda Clarke and Dr Ian Fitzgerald), issued by Thompsons Solicitors LLP for and on behalf of the Claimants Solicitors Steering Group, 2014-2016, UoW £14,285 plus VAT.
* *Analysis of data from heat pumps installed via the Renewable Heat Premium Payment Scheme (RHPP) to the Department of Energy and Climate Change (DECC)* A c£400,000 contract with research consortium from UCL, BSRIA, SP Technical Sweden for UK Department of Business, Energy and Industrial Strategy (BEIS), £35,000 to UoW (Colin Gleeson), 2014-2017.
* *Constructing post-war Britain: building workers’ stories 1950-70,* a Leverhulme Trust project (£147,682)
* *Olympic Builders Film Project: community film project,* Barry Amiel and Norman Melburn Trust
* *Transparency for Upholstering and Cabinet Making Qualifications and Quality in the European Furniture Industry,* European Commission Leonardo project, October 2012-September 2014, €11,250, internal evaluator role
* *Bricklaying Qualifications, work and VET in Europe* Main scientific partner responsible for the scientific coordination and English part of a 2-year, 8 country project for the European Commission (€380,000)
* EU Progress Fund: European Retrofit Network. *Retrofit methodologies for social housing and their VET requirements*. (€30,000)
* *Preserving trade union history: union organization in the Construction Industry*. Janet Druker with funding from the Amiel and Melburn Trust
* University cross-faculty start-up grant received in 2010 (£3,000)

# 2.2 Self-Assessment

ProBE was founded on a Business Plan, which has been annually updated since 2010. This contains detailed information on the Centre’s aims and objectives, how these are being met through current projects and activities, financial information, annual research outputs and a strategy for growth since its inception. The following section uses the guidelines for centre self-assessment set out in the University of Westminster’s Policy on Research Centres document.

1. ***Promotion and facilitation of interdisciplinary research and enhancement of research networking and capacity and infrastructure***

ProBE’s distinctiveness lies in its multi-disciplinary approach to researching the built environment and is exemplified in its five key areas of research: history; education training and professional development; construction industry employment and labour issues; production of architecture, plans and urban strategies; and climate change and work. These in turn have initiated five areas of research which together address ProBE’s core objectives **1, 2, and 3**:

1. To develop a coherent body of research on social processes underpinning the production of the built environment
2. To research problematic issues and develop unique theoretical approaches
3. To develop interaction between academics, policy-makers, practitioners, employers and trade unionists in identifying and researching key issues

*Multi-disciplinary perspectives* are also achieved through the input of the members of the Advisory Board who represent, industry, trade unions and academics and affiliate members drawn from a range of departments within fABE and WBS and also the Faculty of Social Sciences and Humanities. These meetings, which include current salaried Research Fellows and Visiting Scholars, are the means through which the Centre’s activities are discussed, aims and objectives examined and future policy suggested. The centre is managed via regular meetings between the Directors (Linda Clarke and Christine Wall) and the Deputy Director (Colin Gleeson). Members are also active in the research networks listed above (see Networks and Research Contacts).

*Research networking and centre infrastructure* are significantly enhanced through provision for Visiting Scholars and Professors:

* 2017 Dr Kim Moody for research on the American labour movement.
* 2016-7 Prof. Kazuhiko Asami for research comparing industrial relations in the UK and Japanese construction industry
* 2011 – present: Dr Olivia Munoz-Rojas (RF on Leverhulme project and Co-Applicant on AHRC proposal).
* 2012-2013: Dr Valerie Francis, University of Melbourne, Australia
* 2014-present: Richard Clarke, formerly Birkbeck College, University of London
* 2015-2017, Professor John Calvert, Simon Fraser University, Vancouver
* 2010-2011: Professor Janet Druker (*Preserving trade union history: union organization in the Construction Industry*)

Each scholar undertakes an agreed plan of work and contributes to at least one ProBE seminar during their visit.

**AREA A. Implementation of the European Qualifications Framework, with special reference to construction,** a programme of projects that began 2006, including:

* *Transparency for Upholstering and Cabinet Making Qualifications and Quality in the European Furniture Industry,* European Commission Leonardo project, October 2012-September 2014, €11,250, internal evaluator role
* *Bricklaying Qualifications, work and VET in Europe* Main scientific partner responsible for the scientific coordination and English part of a 2-year, €380,000 Euros, 8 country project for the European Commission entitled*,* completed 2011.
* *A European skills framework: cross-national equivalence of vocational qualifications*– Nuffield Foundation, 2006-9, £115,000, jointly with Prof. Christopher Winch of Kings College London.

The *Bricklayer* project was managed by the European Federation of Building and Woodworkers (EFBWW) and the European Construction Industry Federation (FIEC) under the Lifelong Learning programme and involved twelve partners from Belgium, Denmark, England, France, Germany, Italy, the Netherlands, and Poland, including training institutions, social partner (trade union and employer) organisations, researchers and academics - all familiar with the construction sector and experienced in VET policy and practice. Details and the final report can be found on the website: [www.bricklayer-llp.eu](http://www.bricklayer-llp.eu). Bricklaying, as a key construction occupation, provided an ideal case to examine the ways in which the mutual recognition of qualifications might be achieved. The European Qualifications Framework (EQF) is intended to promote the mobility of labour and facilitate opportunities for lifelong learning by enhancing the comparability and transferability of qualifications and competences across the Member States. The project examined the problems likely to be encountered in their implementation and showed how bricklaying qualifications and competences are embedded within their respective customs, laws and institutions and encompass different ranges of activities and knowledge requirements. Mutual recognition may be premised on the establishment of ‘zones of mutual trust’ and a sectoral qualifications framework, both considered in the proposals put forward.

The *Bricklayer* project involved many people, from the construction social partners at national and European levels, government and local authority organisations concerned with VET, VET researchers and experts, professional, practitioner and other construction organisations. Representatives from 13 different European countries attended the final conference held on 25th November 2010 in Brussels. It has also produced many outputs including: conference papers, journal articles, book chapters, and invited presentations*:* for instance, it is one of the few, out of several hundred, to be selected for presentation at a conference on EQF – Developing Sectors. The project has been identified as one of the top 30 Leonardo projects of recent years and its main findings continue to be on the agenda of the European sectoral Social Dialogue and of the European Commission.

This series of projects formed an impact case in the WBS REF submission. The work has been carried forward through a series of ‘impact seminars’, held jointly with Kings College London, and proposals on future skills requirements under the Horizon 20/20 programme. The VET4LEC project, in its aim to consider qualifications and curricula related to energy literacy, will further develop this area by considering how the EQF can be modified in the light of future skill requirements.

The impact is also evident from invitations to act as invited speaker at many conferences and events, including:

2017 October 5 ‘Trade-based skills versus occupational capacity: a comparison of post-war development of construction VET in Britain and Germany’, University College London conference on skills shortages in construction

2017 September 27, German Historical Institute, London, invited speaker to conference on VET in the construction industry in Europe

2016 September 26, SKOPE conference on VET in Germany and Britain, University of Oxford

2015 April 29, *Understanding vocational education and training,* invited presentation by Linda Clarke to Cambridge Assessment Network, Downing College Cambridge, recorded: - <http://www.cambridgeassessment.org.uk/news/vocational-how-to-build-it-better/>

2012 ‘Den Europaeischen Qualifikationsrahmen im Baugewerbe umsetzen: Mauren also Fallstudie’ presentation by Linda Clarke and Christopher Winch to Bundesministerium füt Bildung und Forschung (German Education and Research Ministry) conference *Fortbildung schafft Chancen*, Berlin 20 March

2011 ‘How learning outcomes based sectoral approaches support European co-operation and solutions; strengthening excellence and relevance. Presentation by Linda Clarke of good practices/projects’, *The Role of Social Partners in Implementing European Tools and Principles: increasing the relevance of education and training to the labour market,* CEDEFOP Conference, 24-25 November, European Parliament, Brussels

2011 ‘Case study Bricklaying’ *Assuring the quality of VET qualifications: The contribution of EU tools to the definition and re-definition of learning outcomes-based standards,* Presentation by Linda Clarke to European Qualifications Framework, EQAVET and ECVET Joint Seminar, 14 -15 November, Bonn

2011’Problems of Qualifications, Knowledge, Skills and Competence in the European Labour Market’, Presentation by Linda Clarke to Solidar conference *Achieving decent work and quality jobs through effective industrial relations, information and training of workers,* 21st September, in the European Parliament, Brussels.

2011 ‘English qualifications in European context: the example of bricklaying’, plenary presentation by Linda Clarke to International Working Party on Labour Market Segmentation, Bamberg 11 – 13 July

2011 Presentation by Linda Clarke to *Apprenticeship Seminar ‘International Perspectives’* Coventry, 8 February, organised by National Apprenticeship Service

2010 ‘Bricklayer Project’, findings presented by Linda Clarke and Christopher Winch to *Social Dialogue Committee FIEC-EFBWW*: *working group on Vocational Training*, 25th November

2010 ‘Apprenticeship in Bricklaying in Germany and the UK: a case study’, Presentation by M. Brockmann, L. Clarke and C. Winch, *The German and UK Training Systems: is the grass greener on the other side?,* TUC conference, Congress House, London, 22 November

2010 ‘Bricklayer Project’, presentation by Linda Clarke to European Trade Union Confederation (ETUC) Working Group on *Lifelong Learning*, 10 May, Brussels

2010 ‘Trust or Mistrust? A case study approach to European qualifications and skills’, Presentation by Michaela Brockmann, Linda Clarke and Christopher Winch, to *Comparative Employment Relations and Governance group* seminar, 22 April

2010 ‘European systems of vocational education and training (VET) – the cases of England, France, Netherlands and Germany’, Presentation by Michaela Brockmann and Linda Clarke to *Science Community Representing Education (SCORE) Annual Conference*, Royal Society, 26 February

**AREA B. Oral and other Histories of Producing the Built Environment:** a series of projects that is achieving increasing recognition, including:

* *Housing and Labour: a pilot oral history of post-war council house building in England and Scotland* £23,750 Jan- July 2017, PI Dr. Christine Wall, Co-Applicant Prof Linda Clarke, Research Fellow, Dr. Melahat Sahin-Dikmen. This ongoing project aims to prepare the groundwork for a major exploration of the role of local authority builders in post-war social house building. It facilitates a programme for the travelling exhibition, Constructing Post-war Britain: building workers stories 1950-70, which is being exhibited in strategic sites where DLOs built housing. Building on existing partnerships with Bishopsgate Institute and The Scottish Oral History Centre the project continues to develop the innovative, interdisciplinary methods in previous projects. This project is timely in coinciding with the re-emergence of social house building by both councils and housing associations, including in Glasgow, London, Manchester and Liverpool, providing historical insights to address the housing crisis and directly employ and train construction workers. The project will conclude with a workshop of expert participants, Housebuilding and Labour, to be held in July 2017.
* *Architecture and Building Labour: using oral and visual evidence to enrich policy and practice in the built environment*, £23,750, Jan- July 2016, PI Dr. Christine Wall, Co-Applicant Prof Linda Clarke. This project catalogued and deposited the archive of the Constructing Post-War Britain oral history project archive at the Bishopsgate Library and Institute. This new archive will be launched in 2017 later this year on a new digitisation platform. A portable exhibition of seven banners based on the above project was displayed for the first time, together with promotional literature, at a one-day symposium on Architecture and Building Labour: Afterword or Prologue held on 15th July 2016 with Professor Fran Tonkiss, LSE, as opening speaker. The project also included the compilation of a new bibliography, digitised into a searchable reference set.
* *Housing and urban change in London Fields: from gentlemen traders to feminist activists.* £1,000 to Dr. Christine Wall. London in the mid-1970s was home to around 30,000 squatters, many of them women. This unusual access to housing enabled radical experiments in collective living and this project examines one such community. Using oral histories of former members, contextualised with archive documents, photographs and plans it uncovers the experience of building, both literally and figuratively, a community, which lasted for over twenty years. It provides new insights into the origins of feminist architecture in London and wider processes of urban change.
* *Woodberry Down,* Suzy Nelson and Jane Lewis (London Metropolitan University) in collaboration with the residents' association (Geoff Bell) on the current regeneration of the estate, including the building of the estate, schools and health centre, and its subsequent decline, 2017-8
* *Constructing post-war Britain: building workers’ stories 1950-70,* a Leverhulme Trust project (£147,682), began August 2010, part of *Britain at Work 1945-1995,* an umbrella group promoting projects related to the oral histories of workers, for which a cooperation agreement has been signed by a range of institutions. This original Leverhulme project aimed to collect the stories and memories of building workers who worked on the construction of important examples of post-war architecture and civil engineering. The case studies chosen include iconic projects of the early Welfare State as well as private developments (Stevenage New Town, South Bank Arts Complex and the Shell Building), large industrial sites associated with nationalised industries (Sizewell A Nuclear Power Station), civil engineering schemes (the M1 motorway) and schemes offering new perspectives for future living and working (Barbican development). All reflect the importance of large projects in shifting entrenched attitudes and traditional social, technical and industrial relations in the construction industry. The objectives of the project are to:
* Find and record the working and living experiences of over 50 building workers engaged on case-study sites;
* Evaluate these in the light of documentary evidence, related literature and research;
* Identify key changes in post-war social relations of building production and assess their significance for the sector and for the built environment;
* Create a sustainable archive of oral histories of building workers
* Reveal the role and experiences of building workers in the creation of the post-war built environment.  
  Much of this has now been achieved. The research was led by Christine Wall (PI), Linda Clarke (Co-App), Charles McGuire (Research Fellow) and Olivia Munoz-Rojas (part-time Research Fellow). This multi-disciplinary project was extended until April 2013 and met regularly with an Advisory Group consisting of professionals and practitioners from the range of fields covered by the research. Following completion, with the support of the UoW Strategic Fund for the *Architecture and Building Labour* project, over 60 recordings have been archived at the Bishopsgate Institute and an exhibition produced, with accompanying audio extracts from the recordings. Through the following Strategic Fund project, *Housing and Labour*, the exhibition has begun to tour the country and the archive launched. A wide range of outputs in this area can be accessed on the project website: www.buildingworkersstories.com.

The next stage is to publish a book on the project and continue the research into the 1970s. Other spin-off projects include:

* *National Theatre History*: Since 2014 Christine Wall has been collaborating with the National Theatre on researching the construction of the theatre, and recording oral histories 5.
* Christine Wall was an invited speaker to the Evening Lecture Series, The use of oral history in architectural and construction history: narratives and critiques, June 26 2017, Institute of Art History and Historical Urbanism, Technical University of Berlin.
* Christine Wall was a Keynote speaker at the launch of the project, *Building Brussels*. Brussels city builders and the production of space, 1794 – 2016, June 6, 2017, Vrije Universiteit Brussels.
* Christine Wall and Linda Clarke were invited speakers to Oral History Seminar, Constructing Post-War Britain, May 22, 2017, Scottish Oral History Centre, University of Strathclyde, Glasgow.
* 2016 July 14th, ‘Changing divisions between building workers and architects: a production-based approach’, presentations of Linda Clarke and Christine Wall to ProBE symposium *Architecture and Building Labour,: Afterword or Prologue?,* University of Westminster
* Christine Wall was an invited participant in May 2015 to the ESRC funded *Modern Futures* Network seminar series based King’s College, London.
* Christine Wall was an invited speaker at the IOTA design history seminar series, University of Brighton, April 2015.
* Christine Wall was invited to give a seminar in the Oral History strand at the Institute of Historical Research, Senate House, London in February 2015
* Standardization on Site: skill and the construction process in mid-twentieth century Britain, at Standard Architecture Symposium, October 20 -22, 2017, Deutsches Architekturmuseum, Frankfurt am Main, Germany.

Christine Wall has also been invited as a fully-funded visiting scholar to University of Melbourne (2016) to continue research on construction of post-war architecture.

**AREA C. Labour in the construction industry:** a series of projects concerning different aspects of labour in the construction sector, drawing on earlier projects carried out, and including:

* Strategic Research Investment Fund Grant.Phase 4 Excellence with Impact 2017/18:*Varieties of Collective Action and Organisation by Precarious Workers in Latin America: A Comparative Study of Chile, Argentina and Peru*. Fernando Duran Palma with Linda Clarke as co-applicant.
* *Wage Analysis in Globalisation faced by Europe (WAGE),* partner in proposal for a network, submitted by Prof. Michel-Pierre Chelini, Artois University, €50,000, November 2015 to March 2017
* *‘Raising the bar’ for the representation of women in the construction workforce,* Thames Tideway Tunnel (TTT) project, from September 2014, £26,200 till January 2015 with University of Loughborough as subcontractor.
* *The Blacklisting Legacy:* unfunded project exploring the aftermath of disclosure of blacklisting in the construction industry. Professor Janet Druker
* *Blacklisting Claims*, Report on construction wages since 1968 in response to: ‘Instructions to Experts’ (Professor Linda Clarke and Dr Ian Fitzgerald), issued by Thompsons Solicitors LLP for and on behalf of the Claimants Solicitors Steering Group, 2014-2016, UoW £14,285 plus VAT
* *Olympic Builders Film Project: community film project,*coordinated by Marker Ltd in association with the European Institute for Construction Labour Research, Margaret Dickinson (film-maker) with Linda Clarke, launched 2012
* *Employment relations on the London 2012 Olympic site:* unfunded project co-ordinated by Prof. Janet Druker, in conjunction with Professor Geoffrey White (university of Greenwich)

ProBE was instructed by the solicitors representing over 600 compensation claimants relating to blacklisting, mainly construction workers, to provide supporting evidence on wages in construction since the 1960s, including searching and summarising over 200 documents. This expertise on wage relations is also evident from the partnership in the global WAGE network, proposed for a COST network. Research advice was also given for the Olympic film project, which documented the experiences of working and training in construction in London during the building of the Stratford Olympic Park and explored the possible influence of this huge, high profile development on Londoners who work or want to work in construction. Serious filming began in 2009, including interviews in Further Education Colleges and inside the Stratford Park, and continued to late 2011. The project obtained small grants and well as relying on voluntary contributions. The project also involved five emergent filmmakers, making their own short films featuring an individual working in construction. The tangible products are the documentary film, an archive of material shot, and the short films, as well as the learning experiences of those taking part. The films are available and have been shown in festivals and distributed on DVD and from the net (<http://constructionandthegames.com>).

ProBE has obtained considerable recognition for work on diversity in construction, which led to the contract with Thames Tideway on women in the construction workforce. Christine Wall’s long term work on the gendered nature of the industry, in particular women’s under-representation in both historic and contemporary contexts, was also recognised in 2015 when her research lead to a revision of English Heritage’s listing of Waterloo Bridge to include an account of the many women who worked on its construction during the WW2. This was widely publicised on national and local news networks and social media.

Other projects in the area have also included:

* *Study on the protection of workers’ rights in subcontracting processes in the European Union,* with Ian Fitzgerald, Northumbria University, European Commission project coordinated by Consortium Ghent University – University of Amsterdam, 1 January 2011 to 31 December 2011.
* *Disability and labour market participation in ICT, health and construction in Norway, Britain and the Netherlands*– Norwegian Work Research Institute funded by Norwegian Research Council (£20,000) June 2005 to January 2009
* *Migrant Labour in Construction,* a project coordinated by COMPAS, University of Oxford, for Home Office Migration Advisory Committee, March to October 2008, £2,500, with Prof. Andrew Dainty (Loughborough University) and Paul Chan (University of Northumbria).
* *Diversity in Construction,* jointly with London Metropolitan University for Greater London Authority, June 2006 – December 2007, GLA report published and launched February 2007 (UoW £5,100).

Impact in this area is evident from invitations to speak at conferences and other events, including:

2017 June 16 ‘Sustainable housing production: the need for high quality training and directly employed construction workers’, Linda Clarke at the conference, *Solid Foundations? Economic Inequality and the Housing Crisis,* 16 June 2017, Trinity College, Dublin

2016 November 22, ‘Difficulties in gauging wages and earnings: the example of the post-war British construction industry’*,* Linda Clarke invited speaker to conference *Wage Analysis in a Globalising Environment, Amsterdam,* International Institute of Social History, Amsterdam

2016, July 6, *‘*Addressing skill shortages through increased diversity and inclusion – developing frameworks for diversity in the construction industry’, Linda Clarke invited to CIRIA event, *Addressing the skills gap in construction,* London

2016 March 18, ‘Construction Labour: an international perspective’, Linda Clarke invited as speaker to University of Reading seminar

2015 November 16, *Organising Precarious Workers: alternatives and experiences from Latin America*. UCL Institute for the Study of the Americas. Fernando Duran Palma invited panellist.

2015, March 21, *Valuing Construction Labour,* key note presentation by Linda Clarke to Construction History Society Conference, Queens College, University of Cambridge, Annual Lecture

2014 ‘A production-based approach to understanding the social process of change in the construction industry: examples from the past and lessons for the future’, presentation by Linda Clarke to *Building Work: Histories, Sociologies and Geographies* seminar day*,* University of Loughborough, 10 October

2014 ‘The troublesome theoretical and practical relation between labour and architecture: The Bartlett International Summer School debates 1979-1993’, presentation by Linda Clarke at *Kapital Architecture, London Festival of Architecture,* Royal College of Art, June 12.

2012 ‘*2012 in overview’.* Invited keynote presentation by Janet Druker at the 2012 conference of the Association of Researchers in Construction Management (ARCOM). Edinburgh 3-5 September.

2011 ‘The development of building labour and the changing post-war employment contract’, presentation by Linda Clarke to *Further Reading Required: building specifications, contracts and technical literature,* 17 February, University College London

2010 ‘Enabling and Disabling: migrants, health and safety and disability in the British and Dutch construction sectors’ presentation by Linda Clarke at ESRC seminar series *The impact of migrant workers on the functioning of labour markets and industrial relations,* University of Northumbria, 14 April

**AREA D. Low Energy Construction:** This is an increasingly critical area of development for ProBE, with projects so far including:

* *Inclusive Vocational Education and Training for Low Energy Construction,* European Commission project led by European Construction Industry Federation (FIEC) and European Federation of Building and Woodworkers (EFBWW), with 10 country partners (Belgium, Bulgaria, Finland, Germany, Hungary, Ireland, Italy, Romania, Slovenia, Spain), external expert (Prof. Linda Clarke, Dr. Colin Gleeson, Dr Melahat Sahin-Dikmen), €55,000, January 2017-December 2018.
* *Green Transitions in the Built Environment,* led by Colin Gleeson (fABE) with Linda Clarke and Dr Melahat Sahin-Dikmen, $26,500 (Total $47,000), awarded October 2016, for completion November 2017 (part of ACW programme, see Area E below).
* *Analysis of data from heat pumps installed via the Renewable Heat Premium Payment Scheme (RHPP) to the Department of Energy and Climate Change (DECC)* A c£400,000 contract with research consortium from UCL, BSRIA, SP Technical Sweden for UK Department of Business, Energy and Industrial Strategy (BEIS), £35,000 to UoW (Colin Gleeson), 2014-2017.
* *EU Progress Fund: European Retrofit Network****:*** The European Retrofit Network provided a methodology for retrofitting social housing to reduce carbon dioxide emissions with an analysis of their VET requirements for an EU-wide retrofitting industry. The project involved collaboration between ProBE and the Max Lock Centre at the University of Westminster with Groundwork London, with partners in Poland, Spain and Montenegro. The Westminster package focused on retrofit interventions to quantify emissions savings for different housing typologies. The research entailed emissions reduction modeling and interviews with stakeholders, including social housing providers, architects, project managers and building contractors.

Impact in this area is event from invitations to speak at conferences and other events, including:

2017 January 6, Presentation by Colin Gleeson of heat pump renewable heat research findngs to UK Government and industry partners. Department of Business Energy and Industrial Strategy (BEIS), Whitehall, London

2016 October 17, ‘Developing a strategy for the transition to low energy construction’, Linda Clarke and Colin Gleeson invited to Unite National Shop Stewards Forum, Engineering Construction, Leeds

2016 February 25, ‘Women and Low Energy Construction: a new opportunity’, Linda Clarke invited as speaker at University of Reading seminar

2013 ‘How can the construction sector become green?’, presentation by Linda Clarke and Colin Gleeson to *Work in a Warming World: Labour, Climate Change and Social Struggle* conference*,* 29 November-1 December, York University, Toronto, Canada

2013 *Sustainable construction: what is in it for worker representatives, workers health & safety and working conditions?* Key-note presentation by Colin Gleeson to 'Sustainable construction - or how to develop a social, long-term, environmental friendly industry'. ETUI Brussels, 5 November.

2013 *The performance gap, how far do outcomes meet expectations?* Presentation to 'Refurbishing Britain'. Ecobuild London, 7 March.

2012 ‘Bolt-on skills for low-carbon construction ?: British training in European context’, presentation by Linda Clarke and Colin Gleeson to *New Skills for Green Jobs Workshop Programme,* Bicton EaRTH Centre, Bicton College, Devon, 1 March

2011 *Training for Retrofit. EU Trainbuild project.* Presentation by Colin Gleeson to European Commissioners, Brussels, 11 October.

2011 ‘Bolt-on skills for low-carbon construction? British training in European context’, presentation by Linda Clarke and Colin Gleeson to *Greening Work in a Chilly Climate: Canadian Challenges and International Perspectives* Conference, 17th November, York University, Toronto, Canada

**AREA E. Climate Change and Work**

* *“Adapting Canadian Work and Workplaces to Respond to Climate Change: Canada in International Perspective”*, Canadian Social Sciences and Humanities Research Council Partnership Grant for $2,547,130.00 (plus a further $2.2 million in matching funding and contributions from partnering organizations), seven-year international research project, led by Professor Carla Lipsig-Mummé, professor of work and labour studies in York University’s Faculty of Liberal Arts & Professional Studies, Toronto, awarded August 2014, with Professor Linda Clarke (WBS) as Associate Director, and steering group member and, as with Dr Colin Gleeson (fABE) and Prof Fred Steward, co-applicant. The project includes 38 individual members and 19 partners, one of which is UoW, in four countries. For UoW, this includes:
  + *Baseline report,* submitted January 2016, with papers on ‘Policies and practices to promote work enhancing pathways in the transition to a low carbon economy: Europe’ and Labour Unions and Green Transitions in the US’, $10,500
  + *Green Transitions in the US and Europe,* With Fred Steward (PSI), $20,000, 2016/7
  + *International Policy Group Working Group operations stipend,* 2016/7, $10,000

Following the partnership with York University, Toronto, Canada, ProBE is gaining increasing expertise and recognition in this area, in particular in relation to the role of trade unions. The programme of work is gaining ever greater momentum as new projects are developed, proposed, awarded and progressed. The outputs of these include an additional database on the ACW website on interventions in relation to climate change and work where trade unions have played an important role. This case study database is additional to the others being developed by partners to the project, on collective agreement clauses globally and on training programmes and modules. Recognition of the significance of these databases was evident from their being cited in a United Nations (Framework Convention on Climate Change) publication in 2016, *Just transition of the workforce, and the creation of decent work and quality jobs*.

1. ***Management of resources and research support for members and wider university community***

Externally funded projects have been the key means of income generation and a source of internationally recognised high-quality outcomes over the last four years. ProBE staff are continually writing and submitting proposals in a highly competitive environment. Below is a list of submitted proposals.

*Research Proposals submitted*:

* *Construction sector employment in Low Incomes Countries (LICs),* proposal with the Max Locke Centre submitted 28 April 2017, for research on behalf of the UK Department for International Development with the International Labour Organisation, £44,460.00, unsuccessful.
* *Inclusive Vocational Education and Training for Low Energy Construction (VET4LEC),* proposal with European construction social partners (EFBWW and FIEC), submitted July 2016 under ‘Support for Social Dialogue’ programme, successful

*Sisterhood, sawdust and squatting,* submitted to British Academy small grants, November 2014, £10,00, Christine Wall, PI unsuccessful. Revised as fABE proposal 2016.

* Strategic Research Investment Fund Grant.Phase 4 Excellence with Impact 2017/18:*Varieties of Collective Action and Organisation by Precarious Workers in Latin America: A Comparative Study of Chile, Argentina and Peru*, submitted 2017, successful.
* *Green Transitions in the Built Environment,* $26,500 (Total $47,000), submitted to ACW programme, awarded October 2016, for completion November 2017
* *Green Transitions in the US and Europe, w*ith Fred Steward (PSI), submitted to ACW programme, $20,000, 2016/7, successful
* *Industrial Relations, Trade Unions and Climate Change (IRTUCC),* proposal submitted July 2015 to European Commission programme ‘Improving expertise in the field of industrial relations’, lead applicant, €325,391 over 2 years, with 6 countries (Bulgaria, Germany, Italy, Sweden, Turkey, UK), coordinated by UoW, submitted August 2015, unsuccessful.
* *Wage Analysis in Globalisation faced by Europe (WAGE),* partner in proposal for a network, submitted by Prof. Michel-Pierre Chelini, Artois University, €50,000, submitted July 2015, successful.
* *Young Adults Learning and Access to Labour Market (YALE)****,*** partner in Centre for Employment Research (Emmanuelle Walkowiak) proposal to European Commission programme ‘The Young Generation in an Innovative, Inclusive and Sustainable Europe’, led by *Bundesinstitut für Berufsbilding*, Germany, submitted May 2015
* . *Vocational Education Centre*,partner in consortium proposal to BIS, 3 years, c£2m, led by Peter Urwin, submitted January 2015, unsuccessful.
* *Proposal for Reports estimating loss of earnings for lead claimants in the CIVIG litigation,* total proposal £91,230 submitted by Dr Victoria Wass of Cardiff University, with £20,475 (35 days) for University of Westminster, court required only one expert, not three, 19 days awarded.
* *Building Brutalism: architecture, labour and concrete,* submitted to Arts and Humanities Research Council October 2014, 30 months, £485,775, with Christine Wall as PI and Linda Clarke and Olivia Munoz-Rojas as co-applicants, favourably reviewed, not accepted.
* *‘Raising the bar’ for the representation of women in the construction workforce,* proposal to Thames Tideway Tunnel for 7 year research project, in three phases, with the first phase ((£26,200) September 2014, with University of Loughborough as subcontractor, successful.
* *Adapting Canadian Workplaces,* proposal by York University, Canada, with UoW as partner to Canadian Social Sciences and Humanities Research Council, 2.5m Canadian dollars over 7 years, from September 2014, successful
* *Manufacturing Cultural Heritage: European tensions, challenges and creative opportunities.* EC FP7 £128,400, unsuccessful
* *Scaling for Retrofit,* proposal to Technology Strategy Board led by Building Research Establishment, £1,450,000 (£180,000 UoW), June 2013, withdrawn
* *How can the world of work help to slow global warming?* Outline proposal submitted to Canadian Institute for Advanced Research (CIFAR) by Prof. Carla Lipsig-Mummé with ProBE as co-applicant, York University, Toronto, 3m Canadian Dollars, unsuccessful
* *Work in a warming world,* Outreach award proposal, £8,940 to Foundation for Canadian Studies, unsuccessful
* *Establishing the knowledge and skills challenge for UK Green Construction,* Green Construction Board, Construction Industry Council, £39,748, April 2013, unsuccessful
* *VET4LEC, Qualifications, Skills and Vocational Education and Training for Low Energy Construction,* submitted to European Commission, August 2012, with 5 countries and 7 partners, coordinated by University of Westminster, 23 months, €395,990, unsuccessful.
* *Building Labour: using oral and visual evidence to enrich policy and practice,* submitted to ESRC Knowledge Exchange Opportunities programme, August 2012, FEC £86,308.50 (ESRC contribution £69,046.80), 1 year. Classified ‘outstanding/excellent’, unsuccessful.
* *Social and employment relations issues in the construction of energy plant (SERICEP),* proposal submitted first in March 2012 and again in September 2012, outline proposal for International Network covering 10 partners and 5 European countries to European Commission COST programme, classed as ‘excellent’ and scored very highly but not accepted
* *Implementing the European Qualifications Framework within the European Labour Market,* submitted by Kings College London in March 2012, and again in September 2012 and March 2013, outline proposal for International Network covering 10 partners and European countries to European Commission COST programme, also classed as ‘excellent’ and scored very highly but not accepted.
* *Determinants of the composition of the workforce in low skilled sectors of the UK economy – Lot 2 Qualitative Study of the Construction Industry,* submitted November 2012 by University of Manchester with Universities of Westminster and Loughborough as partners, to Migration Advisory Committee, Home Office programme, for £48,832.80. Unsuccessful
* (2012) Local Energy Assessment Fund (LEAF). *District Heating in Soho, London*. Joint application with Soho Residents Association. £20,000. Unsuccessful
* (2011) TSB, KTP. *Retrofitting 1970’s blocks - mixed residential & retail*. With Child, Graddon, Lewis Architects. £80,000. Unsuccessful
* (2011) Cost EU *Trans-domain network on power generation* Unsuccessful
* (2010) Technology Strategy Board. *Application of phase change materials in transiently occupied locations*. £30,000. Unsuccessful

1. ***Provision of education and training in research and related skills for graduate and undergraduate students to enhance academic programmes***

An important aspect of the role of senior members of ProBE’s staff is the support and encouragement of Research Fellows to publish in academic refereed journals and also to write and submit research proposals of their own. This strategy is essential for the ProBE’s maintenance as an active nucleus for research and is written in to ProBE’s Business Plan as core **Objective 6**.

Central to building up ProBE is also the role of affiliated doctoral students. Each year ProBE applies for one or two research studentships, as well as encouraging applications from fee-paying students. Support for these students depends not only on the existing supervisory capabilities of ProBE staff, a number of whom with at least two completions, but also on developing supervisory capacity through involvement in the supervisory team and through taking the Research Supervision modules offered by the Graduate School. Support for 2 PhD students over a seven year period is also built into the successful programme on *Work in a Warming World,* with York University, Toronto that begin autumn 2014, one of which is due to begin September 2017.

ProBE has and has had a number of affiliated PhD students. These include:

* *Aletha Holborough*, with Director of Studies Linda Clarke, undertaking a project on the transition for ethnic minorities from vocational education to the construction labour market, with a particular focus on the construction of the Olympics and on electricians, completed successfully in 2015. Aletha was involved with the *Olympic Builders* Film Project and presented her research at seminars including, *Building the Olympics – From Barcelona and Athens to London: what has it meant for construction labour and employment*: Symposium and Film Preview, on 30 April 2012 at Fyvie Hall, Regent Street, and also at lunchtime seminars on Marylebone campus.
* Christine Wall is currently Director of Studies for PhD student Noha Al-Ahmadi who is using oral history methods to investigate the vernacular architecture of Saudi Arabia in her PhD, *Voices of the Vernacular* and Dr. Wall has also contributed to the SABE PhD training programme. Christine is also Director of studies for William McClean’s doctoral thesis by publication provisionally titled, *A Social History of Technology and Innovation in Architecture.*
* The granting of a fully funded studentship on the subject of women in construction resulted in Dr Wall becoming Director of Studies and Linda Clarke co-supervisor for the *Denise Bowes*, whose PhD is entitled ‘A capabilities approach to women’s pathways in quantity surveying: opportunities and constraints’.
* Following the successful PhD supervision of Nadya Gabril *“Passive Solutions for Cooling and Heating Loads for Modern Houses in Tripoli”,* Colin Gleeson is currently supervising Philippe Saleh *“Towards nearly Zero Energy Buildings in Lebanon: bioclimatic design and experimental building strategies for energy demand reduction in new built”.* He is also supervising PhD candidate Eleni Oikonomou at the Energy Institute, University College London, where he is an Honorary Reader.

The two-year Leverhulme funded project, *Constructing Post-war Britain*, provided fixed term posts for two post-doctoral Research Fellows who were supported in their career development by ProBE members. Both were successful in publishing in peer-reviewed academic journals during their time at ProBE and Olivia Munoz-Rojas was mentored while submitting a proposal for a British Academy three year project which was unfortunately unsuccessful. On leaving, Dr. Charlie McGuire succeeded in obtaining a full time lecturing post at the University of Teeside while Dr. Olivia Munoz-Rojas remains a ProBE Visiting Scholar. Now Dr Melahat Sahin-Dikmen is the research fellow attached to ProBE.

ProBE proposes four possible areas that future PhD students might address:

1. *Making a living: building industry workers in Britain c.1945-c.1980.*

Unlike manufacturing sectors the building industry was never the focus of any intensive sociological investigations in the post-war period, resulting a dearth of historical data on this complex sector. This project will explore the lives of building industry workers, in both private and public sector employment, through an analysis of their social, work, cultural and political affiliations. The role of women and other minority groups in the sector is also under-researched and is an area for particular focus. The research will make use of sources at the TUC Library Collections, local and regional archives, and new material originating from the Leverhulme oral history project.

1. *The transformation of the employment relation: the example of the construction industry*

The employment relation is in a process of rapid transformation, as evident from the changes in employer associations and trade unions and the range of different employment contracts – from agency and temporary labour, to self- and directly employed. No longer is there the expectation of staying with one employer for life, with huge implications for the structure of education and training provision and for employment rights and benefits and the status of unemployment. Nowhere are these changes more evident than in the construction sector in Europe. The project will involve a detailed study of these changes in different European countries, their implications for construction workers and professionals, and the impact of different policies and institutional arrangements to address them.

1. *Vocational education and training for low energy construction (VET4LEC)*

That building envelopes rarely meet their design intent in terms of energy efficiency is well documented. This failure in performance has multi-disciplinary implications for professional and vocational education and training (VET), contracts of employment, payment systems and site conditions. We therefore propose PhD studies to explore appropriate VET provision for low energy construction and the impact of training, working conditions, teamwork and thermal literacy on the quality of building performance

1. *Climate Change and Work*

Following the partnership with York University, Toronto, Canada, ProBE is gaining increasing expertise and recognition in the area of climate change and work, in particular in relation to the role of trade unions and the strategies required for a just transition, locally, regionally, sectorally, nationally and globally. Given the importance of labour as an agent of change, detailed studies of interventions in relation to climate change and work where trade unions have played an important role provide important insights into how a just green transition can be achieved. Future research also needs to investigate the disparate green transitions paths in the construction sector in relation to industry structure and dynamics as well as national legislative, policy and economic contexts, encompassing the role played by the multitude of agents and organisations involved.

1. ***Contribution to university strategic educational and research missions and support of synergies between research, teaching and learning***

ProBE was founded on an internationally recognised body of work previously undertaken by Linda Clarke and Christine Wall and dating back to research projects and jointly authored articles in peer reviewed journals in the mid-1990s. This field of expertise focussing on construction labour and European construction industry, has expanded since ProBE starting operating in 2010 and has contributed to the University’s strategic missions in a number of ways all of which fulfil the centre’s core objectives **4 and 7**, to

* maintain a flexible interdisciplinary research environment that co-ordinates and develops ProBE’s research strengths, resources and commitment and
* integrate the work of ProBE into the University’s teaching and learning programme.

***Teaching***

Members of ProBE contribute to teaching across both Faculties. As well as acting as PhD supervisor, Linda Clarke supervises a range of postgraduate MA dissertations and teaches on the doctoral programme. Colin Gleeson’s research into low energy design and renewable technologies is integrated into his teaching across the Faculty departments at both undergraduate and postgraduate levels. He is a module leader for the MSc in Architecture and Environmental Design. Christine Wall lectures on the First Year Architecture and Interiors History and Theory module on the social context for architectural production. Suzy Nelson is course leader for MA Urban and Regional Planning and teaches planning theory and practice, urban regeneration and urban design skills.

***Seminars***

Regular seminars, held in both Faculties and open to both staff and students, have been a successful means for providing a link between research, teaching and learning. These have covered a number of issues over the last four years and attracted leading speakers from University staff, invited academics and practitioners and include:

1. **18 February 2010 *Building the Olympics***

The seminar was organised as part of the regular programme of ProBE events to present some of the research work going on at the University of Westminster within faBE and WBS in relation to the Olympics. The intention was to explore and critically assess the potential Olympic legacy with respect to the built environment and to begin to discuss this with all those interested in participating - academics, researchers, practitioners or policy makers. Contributions included:

* *East London’s Olympic transformation: a review of aspirations and delivery mechanisms 2003-2010:* Andrew Smith and Nancy Stevenson (fABE)
* *Exploring the Cultural Impacts and Legacies of the London 2012 Games*
* Nancy Stevenson (fABE)
* *The Olympic Cultural Programme and its Role in Fostering Local Creativity*
* Ilaria Pappalepore (fABE)
* *Addressing equality: The construction industry and vocational education and training:* Aletha M. Holborough (WBS)
* *Construction and the Games (formerly known as ‘Olympic Builders’): An educational film project:* Margaret Dickinson (independent film maker)

1. **15 December 2011: *Polish migrants’ contribution to the British construction industry***

Speakers:

* Ian Fitzgerald (Northumbria University) – *The Polish Migration: The Folly of Perception*
* Stephen Cruse: *Polish vocational education applied to rehabilitating London housing*
* Kasia Bobrzak (Northumbria University) – *Difficulties in recognising Polish qualifications: a case study*
* Justyna Deidda and Paulina Burzynska on the work of RIFT *Internationally speaking*
* Followed by: 5-7 pm ***Film*: *'En construcción'*** (Under construction) (2000) by José Luis Guerín, the first of the ProBE film series, a film that narrates the construction of an apartment block over 18 months in El Chino, a working class, migrant neighbourhood in Barcelona, and won the Goya Prize as Best Documentary in 2002.

1. **11 December 2012: Exclusion and work-life balance in the construction sector: how can they be challenged?: seminar and CLR GB AGM**

This event was organised in the light of growing concerns about the exclusiveness of the construction sector and receding well-being and work-life balance. Speakers included:

* Valerie Francis (University of Melbourne): *Workers’ work-family experiences in Australian construction*
* Dr Fred Sherratt (University of Bolton*): Well-being and safety on sites*
* Aletha Holborough (University of Westminster): *Transition, apprenticeships and ethnicity*
* Dr Paul Chan (University of Manchester):*Diversity and Exclusion: What matters in construction?*

The seminar was followed by the AGM of the British office of European Institute for Construction Labour Research (CLR) and was also the occasion to present the latest CLR News (3/12 – [www.clr-news.org](http://www.clr-news.org)) on *Diversity and Exclusion in Construction*

1. **3 July 2013: What challenges for vocational education and training for low energy construction (VET4LEC)?**

The seminar was organized to identify the professional and operative VET and skill requirements and barriers to establishing mass build, low energy construction with the help and active participation of various industry stakeholders concerned with design communication, contractual relations, site management and operative skills. It was attended by a wonderful cross-section of participants, from academics and teachers, to builders and contractors, local authority planners and those from employer associations and trade unions. The speakers were:

* Fran Bradshaw, (senior partner in Anne Thorne Architects), expert on PassivHaus design and construction, active in designing low energy buildings with users and stakeholders.
* Colin Gleeson and Linda Clarke, (ProBE, University of Westminster) discussed the distance between technical specification and on-site implementation.
* Dr Mike Hammond, **(**Research Manager for SummitSkills), discussed the ‘Current Position with Environmental Technologies and Skills Demand’ and the radical changes required to the existing British VET system.
* Tim Fenn, (Managing Director of Green Factory Ltd.) a small design and build company, has developed his own building system using engineered timber and hemcrete.

1. **October 10th 2013: Changes in the Built Environment Professions over 40 years.**

Drawing on the recent article with Andrew Rabeneck in Building Research and Information on 'Professionalism and architects in the 21st century', Frank Duffy reviewed changes in the architectural profession over the last fifty years, arguing that construction professionals need to place more emphasis on the public good by creating and sharing an open-ended, disinterested interdisciplinary body of knowledge about buildings. The different approaches that he proposes avoid however a return to the mythical golden age of 1945-70. Tony Burke responded seeking to situate Frank's considerations relating to architecture within the context of all building professionals and proposing radical changes to the education of the professions as a solution to the ever increasing distance between design and production.

*Introduced by Kate Heron, Head of Architecture, fABE*

*Speakers: Frank Duffy OBE,*founder of DEGW, the international architectural and design practice best known for the office of the future, the flexible workplace and, more recently, for advanced thinking on the programming of education and arts facilities. He was president of the RIBA from 1993-95 and is currently on the Board of Trustees of the Architectural Foundation.

*Tony Burke* is a principal lecturer and leader of the undergraduate Construction Studies programme in fABE, with a special interest in the relationship between higher education and professional careers in construction.

1. **2015 June 17** C**hanging global employment conditions in construction** with:

* Phil Toner (University of Sydney) on *Financialisation and labour in the Australian construction industry*
* Susan Moir (Boston Labor Resource Centre) on *Changing employment in the US construction industry*
* John Calvert (University of Vancouver) on *Construction labour issues in Canada*

Attended by 28 participants

1. **2015 September 21st**, ***Labour and Climate Transition: Policies and practices to promote work enhancing pathways in the transition to a low carbon economy***,ProBE workshop*:*

* Professor Fred Steward(Policy Studies Institute) on Europe
* Professor Dimitris Stevis(Colorado State University) on the US

Followed by round table discussion with participants, including Dr Paul Hampton (FBU), Graham Petersen (UCU), Sam Mason (PCS), Allison Roche (Unison) from trade unions

1. **2016 November 14, Green Transitions**, ProBE workshop to inform ACW project
2. **2017 April 4, A volatile political economy: Climate change and work: international perspectives**, workshop held in Sheffield attended by 40 participants
3. **2017 July 13, Direct Labour: The answer to the housing, construction training and climate change crises?**, ProBE workshop

**Symposia**

A wide audience for ProBE’s research activities has been found through a series of Symposia which, including the launch of ProBE, have been a forum for international speakers and discussants to debate a range of important issues concerning the built environment. These were:

1. **5 November 2010: Skill and Low Carbon Construction: Symposium**

This all day symposium explored the requirements to create low carbon buildings, relating to all aspects of construction, including design communication, contractual relations, site management and operative skills. The underlying objective was to understand how ownership of the whole process can be claimed across occupational and professional barriers in order to make a paradigm shift in the conception of "green buildings" - from niche market to industry standard. Skill requirements for this cannot simply be pinpointed and training provided in the form of a short term technical ‘fix’, without consideration of the context in which young people enter the construction industry, VET provision available, the possibilities of work experience and developing a career, and the prevailing employment and working conditions. The day was divided into different sessions, including:

*Aspirations and barriers***,** with:

* Colin Gleeson (University of Westminster) Introduction to low energy construction
* Robin Nicholson (Edward Cullinan architects) onAdaptation for Built Environment professionals towards zero Carbon Construction
* Tim Fenn (Director Green Carbon Construction Ltd and Vice Chair Oxfordshire Construction Training Group) onThe construction process: skill barriers

*The current response***,** with:

* Alistair Collin (ConstructionSkills) onMeeting Skill Requirements
* David Jazani (Bedford College) onVocational Education and Training provision
* Richard Clarke (Unite) onEmployment Barriers

*What is to be done***?** with:

* Camilla Vakgaard (BAT, Denmark) on Practices elsewhere: Danish Benchmark
* Henrietta Lynch (University College London) with a short film: ‘Barriers to low energy construction in the UK’

*Workshops:*

* Building low energy buildings, led by Cal Bailey (NG Bailey)
* Do skills feature in environmental decision-making? led by Paul Chan (University of Manchester)
* Construction quality, performance and skills led by Malcolm Bell (Leeds Metropolitan University)

1. **20 May 2011: An Integrated System of Education for the Built Environment: Symposium and ProBE launch**

This all day, international, symposium offered the opportunity for an informed, critical and open discussion on an integrated system of VET (vocational education and training) for the built environment with a range of professionals, employers, employees, trade unionists, academics, researchers and all those interested to participate. It is a subject that becomes ever more urgent and the symposium sought to inform policy and challenge the current unsatisfactory system. The day was organised around key problem areas:

***An integrated education for construction***, chaired by Professor Jeremy Till with:

* Professor Paulo Tombesi (University of Melbourne) on The Melbourne Model: professional education and design culture
* Dr Anneke Westerhuis (ecbo, Netherlands) on Indu*stry – wide VET in The Netherlands*
* Roger Taylor (VIA University College, Denmark) on *Education of the Danish Construction Architect*

***Cooperation and conflict between built environment occupa****tions,* chaired by Colin Gleeson with*:*

* Tony Burke (University of Westminster) on *Barriers between the building professions*
* Dr Milinda Pathiraja (Sri Lanka) on *Designing for on-site labour training*
* Tim Fenn (P3Eco & ECO2H2O) on *Integrating occupations on site*

***An integrated practice for construction****,* chaired by Linda Clarke with:

* Riccardo Vanucci (FARE Studio, Rome)on *Design, labour and politics in the construction process*
* Fran Bradshaw (Anne Thorne architects) on *Shared learning between professionals and labour*
* Tom Hardacre (Unite) on *Conflict and cooperation on site*

This was followed by a plenary discussion, introduced by Don Ward of Constructing Excellence, and a slide show *Picturing the building process,* prepared by Christine Wall.

1. **30 April 2012 Building the Olympics – From Barcelona and Athens to London: what has it meant for construction labour and employment: Symposium and Film Preview, Fyvie Hall, Regent Street**

The Symposium examined the impact of the Olympic Games over the past two decades on the industry most obviously impacted by them: construction - and, in particular, their legacy for construction labour and employment. The seminar concerned the employment, working conditions, labour resourcing, and industrial relations in different Olympic construction projects, in particular Barcelona 1992, Athens 2004 and London 2012, presenting very contrasting legacies of the Games for construction labour and highlighting the way in which the Olympics have served as catalysts for change in the construction industry at both the national and European levels. Speakers included:

* Dr Justin Byrne (CEACS, Madrid) on *Barcelona 1992: a good Games for construction?*
* Dr Lefteris Kretsos (University of Greenwich) on *Athens 2004: pre and post-Olympic Legacies: Growth and Debt*
* Aletha Holborough (University of Westminster) on *London 2012: transformative for construction employment and VET?*
* The seminar was followed by a preview and discussion of the film, produced by Margaret Dickinson with ProBE involvement, *Construction and the Games,* born of discussions between researchers and filmmakers interested in labour issues and construction (see Research Projects below).

1. **11 July 2012 Constructing Post-War Britain 1950-70 Symposium**

**1.30-5.00pm Fyvie Hall, Regent Street**

This symposium showcased the findings of two years of the Leverhulme Trust funded project which recorded the experiences of over 60 building workers employed on five key post-war schemes. It was attended by many of the interviewees and their families whose experiences of working on five of the most significant construction schemes of the post-war era have been recorded. The programme, chaired by Professor Jeremy Till, included:

***Speakers***:

* Janet Druker on *Construction labour in the Post-War period*
* Linda Clarke on *the Barbicana*
* Christine Wall on *Sizewell A nuclear power statio*n
* Charlie McGuire on *Stevenage New Town* and *the M1 Motorway*
* Olivia Muñoz-Rojas on *the South Bank Arts Complex*

1. **18 June 2015 Women in Construction: No more softly, softly: its time for real change**

**10.00-18.30pm Board Room, Regent Street**

PROGRAMME, organised around three key problem areas:

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| **International Perspectives: women in the construction workforce** | |
| Strong and consistent measures needed | Sylvia Snijders/ Linda Clarke |
| The example of the Vancouver Highway | John Calvert, Simon Fraser Univ., Vancouver |
| Women and their career advancement in the Australian construction industry | Valerie Francis, University of Melbourne |
| Game Changers: Strategies for crushing the barriers to women entering the construction trades in the US | Susan Moir, University of Massachusetts |
| **Increasing Participation: procurement, targets, quotas and other measures** | |
| Advancing equality through procurement: evidence from the Women into Construction project | Tessa Wright, Queen Mary University |
| The examples of the Olympics, Crossrail and beyond | Kath Moore, Women into Construction |
| Network Rail’s Women on Board initiative | Kevin Bowsher, Network Rail |
| ‘**Raising the Bar’: What can be done in the workplace**? | |
| Leicester City Council, Women in Construction | Barry Sullivan, Leicester City Council |
| The importance of employee and trade union involvement: trade union initiatives in Austria | Brigitte Schulz, Austrian Construction Trade Union |
| **Platform discussion on ‘What needs to be done now and in the low carbon future?’** | |
| Introduced by Jean Lambert MEP, with invited panellists, including Andy Mitchell (CEO, Thames Tideway Tunnel), Siobhan Endean (Unite National Equalities Officer), Suzanne Kervin (UCATT member) and more | |

This symposium, organised in association with the European Institute for Construction Labour Research (CLR), identified - with the help and active participation of researchers, academics, employers, trade unions, and those from women’s organisations, local authorities etc. from Britain, mainland Europe, US, Canada and Australia – what can be done to increase the participation of women in the construction industry. The symposium provided an opportunity to present projects across the world which have shown some success, examine the reasons for this and discuss what is needed to shift an exclusive male-dominated industry with its entrenched white- and blue-collar structures to become inclusive, diverse and composed of a range of green-collar professionals, ‘manual’ and ‘non-manual’. Discussion was informed, critical, open and international with a range of professionals, employers, employees, trade unionists, academics, researchers and all those interested to participate and was intended to inform policy and challenge the current unsatisfactory system.

1. **2016, July 15 Architecture and Building Labour,: Afterword or Prologue?,** 10.30am-5.30pm, Board Room**,** University of Westminster Regent Campus, This symposium sought to discuss the changing relationship between the role of the architect and building worker, as well as the role of labour in the production of architecture. The exhibition was also presented. Well attended by about 50 participants.

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| Introduction: Labour and Architecture: | Christine Wall | ProBE/University of Westminster |
| The social production of built forms | Fran Tonkiss | London School of Economics |
| The socially engaged architect | Geraldine Dening | Architects for Social Housing/ DeMontfort University Leicester |
| Translating Sergio Ferro: labour and design | Katie Lloyd Thomas | Newcastle University |
| Design as part of the construction process | Jörn Janssen | CLR |
| Disputes and divisions between building workers and architects | Linda Clarke | ProBE/University of Westminster |
| The gap between site and design office | Colin Gleeson | ProBE/University of Westminster |
| Producing the West Bromwich temple: cultures of work and querying ‘history’ | Megha Chand Inglis | Cardiff University |
| Breaking down barriers for women into construction | Tessa Wright/  Kath Moore | Queen Mary, University of London  Women into Construction |
| Low energy construction for design: the need for collaboration | Anne Thorne | Anne Thorne Architects |

1. ***Knowledge transfer and social impact (transfer and mobilisation of knowledge through research for the benefit of society, via a variety of mechanisms as appropriate)***

ProBE is founded on the premise that it will deliver real and measurable social benefits to all those engaged in producing the built environment, which in turn will be beneficial to wider communities of users. The social impact of the research undertaken by ProBE is maximised by the variety of disciplines it includes. For example the historical research undertaken in the Leverhulme project (led by Dr. Wall) is grounded in contemporary voices from communities such as Stevenage New Town and the various trade unions and employers associations involved. Dissemination was integral throughout the life of the project; for example in November 2011 the first pamphlet was distributed to project participants at a lunch event held at Stevenage Council Offices and hosted by the Mayor and Deputy Mayor of Stevenage in honour of the building workers interviewed. The decision to produce case-study pamphlets has proved very successful as a means of dissemination and to date they have been obtained by English Heritage, the Survey of London, London Metropolitan Archives, the British Library, the TUC Library and continue to be sent to libraries and museums around the country. Dissemination of these pamphlets and findings has also been facilitated through the Britain at Work oral history network. The success of this project has resulted in the archivist and Education Office of the National Theatre collaborating with Dr. Wall to produce an account of the building’s construction history. The construction union UCATT also promoted a further ProBE publication within the Leverhulme programme, entitled *A Bible of Discontent*. The outputs of this project are freely available via the project website [www.buildingworkersstories.com](http://www.buildingworkersstories.com) and also via the University of Westminster’s site, <http://www.westminster.ac.uk/probe> which provides information on all aspects of the Centre.

A second example, the Nuffield Foundation project (led by Professor Clarke) *Cross National Equivalence of Vocational Skills and Qualifications in Europe* involved collaborative work between Professor Christopher Winch (King’s College London), partners in Germany (Dr. Georg Hanf – *Bundesinstitut für Berufsbildung*), the Netherlands (Dr Anneke Westerhuis, Dutch Centre for Expertise in Vocational Education and Training) and France (Professor Philippe Méhaut, Aix Marseille University). A further example of interdisciplinary and international collaboration centred around the scientific coordination of the 8-country EC Leonardo *Bricklaying* project, concerned with implementation of the European Qualification Framework in the construction sector and based on national and company/site studies, with technical coordination by the European social partners (employers and trade unions) for construction. The project aimed to further the recognition of bricklaying qualifications and competences by enhancing their transparency and comparability, and hence the mobility and the quality of labour. Findings were disseminated across Europe through social partner and research networks. The *Bricklaying* project was a key sectoral study selected for presentation to the first joint EQF/EQAVET and ECVET meeting and to the 2011 CEDEFOP conference in the European Parliament. It has been rated by the EC as one of its five most valuable EQF projects, its conclusions endorsed by the head of the Brussels office of CEDEFOP, and the project commended to the EQF advisory board. The European Directorate General (DG) for Education and Training identified it among the 10 most valuable learning and development projects over the last five years as it links approaches to understanding competence across Europe and provides detailed recommendations on EQF implementation within the labour market. The impact has been especially evident in Germany, including in invitations to present to the annual BIBB (The German Federal Institute for Vocational Education) conference and to the German Education and Research Ministry. The influence the case has had on policy-making is evident also in relation to social partners. The outputs of the *Bricklaying* project have been distributed to their national affiliates by the European construction social partners and extensive consideration given to the proposals by the ETUC (e.g. its Lifelong Learning Group) and the European Social Dialogue (involving social partners from each EU country) for the construction sector (e.g.Vocational Training meetings from 2010 to 2012).

All this has made for a sustainable impact in particular on the construction industry at national and European levels and influenced debate on improving VET activities, on SQF development and on creating ZMTs. In addition the Bulgarian Social Partners for construction have disseminated the results to their national discussion forum and the EFBWW to the European Construction Forum and the Liaison Forum. The *Bricklayer* project engaged users at all stages, including social partners (employer organisations and trade unions), colleges, firms and policymakers, and has been widely disseminated through a range of written documentation and a special issue of the European Institute for Construction Labour Research (CLR) Newsletter (CLR News 1/2010) distributed through its 500+strong network. The impact has been evident in all the participating countries (UK, Belgium, France, Denmark, Germany, Italy, Netherlands, Poland) as evidenced in the Impact case Study.

A third example of impact is given in the work of Colin Gleeson who, in 2014, was invited by Loughborough University and the British Council to be a founding member of the UK-Indonesia Researcher Network (UKIREN) where he is jointly researching “**The development of tropical built environment performance indices” (**<http://ukiren.lboro.ac.uk/projects/> **).** Colin Gleeson also continued his role with DECC and the Energy Saving Trust as peer reviewer for the “Detailed analysis from the second phase of the Energy Saving Trust’s heat pump field trial” (<https://www.gov.uk/government/publications/analysis-from-the-first-phase-of-the-energy-saving-trust-s-heat-pump-field-trial>).

Building on this impact, support was given by the University and by Kings College London for a series of ‘impact seminars’, to further dissemination of the research undertaken and discussions with key stakeholders:

* Brussels 2015 March 18, ***Towards sector profiles for European qualifications*,** worskshop/seminar held in Brussels, with the following programme:
* *Introduction: the importance of the sectoral level***,** Rolf Gehring, EFBWW
* *Conceptual problems: What is the design basis of the EU VET tools and how are they related?,*Linda Clarke (University of Westminster) and Chris Winch (Kings College London
* *Coordinating the tools***:** Jens Bjornavold (European Commission/CEDEFOP)
* *How are tools intended to be implemented at sectoral level?* Karin Van der Sanden(European Commission: ESCO/EU Skills Panorama)
* *How effective are Sector Skills Councils in helping to implement the tools?* Jeff Bridgford (Kings College London)
* *Towards sectoral core competences, lessons from the Bolster up project,* Barbara Galla (IGMetall) and Jan Leijtens (HM Furniture College, Netherlands)
* *EU VET tools and the validation of informal and non-formal learning,*Madhu Singh (UNESCO-UIL)

This workshop was supported by the University of Westminster as part of its impact programme, with very good participation internationally, including from the European Commission (various DGs)

* Kings College on 21st November 2013, on *A qualification transparency tool and its relevance for the evaluation, design, and comparison of UK professional VET qualifications*, when the case of bricklaying was taken to show how the European Qualifications Framework (EQF) might be applied at sectoral level;
* University of Westminster, 14th July 2014, on *How can Vocational Education, Training and Qualifications for Low Energy Construction Accommodate to the European Qualifications Framework (EQF)?* This seminar was focussed on VET and qualifications for low energy construction, introducing examples of a) VET programmes and qualifications in Britain and the Netherlands which have been developed in the area and b) sites built to Passivhaus or equivalent standards, and to discussing c) the difficulties in incorporating knowledge, skills and competences (KSC) required and d) how these KSC can be aligned with the EQF.

1. ***Enhancement of reputation of centre, constituent academic units and the university through quality outcomes***

The existence of the Centre has been established primarily through regular seminars/workshops and periodic events, as well as through its website and publications. As apparent from the profile of its membership, key members of ProBE have long-standing experience of research and established reputations within the field. Each has also published output for submission for REF 2013 and key published outputs since 2008 are listed below. An example of ProBE’s high profile was the launch at the Houses of Parliament of the Smith Institute’s Report on *Women in Construction* to which Prof. Clarke and Dr. Wall contributed the first chapter. The report has been widely disseminated and reviewed through social media, and construction industry websites. Publications of full ProBE members are listed below; those of affiliate members are not included as this would be too numerous:

**Books**

Clarke L. Michielsens E., Snijders S., Wall, C. (2015) *No more softly, softly: review of women in the construction workforce,* ProBE publication, ISBN97-0-903109-50-5

Clarke, L., and Wall, C., (eds.) (2013) *A Bible of Discontent: the memoir of Hugh D’Arcy bricklayer and trade unionist*, London: ProBE/CLR

Wall, C., (2013) *An Architecture of Parts: Architects, Building Workers and Industrialisation in Britain 1940-1970*, Routledge

Wall, C., (2011) *Work and Identity in the Twentieth Century: historical and cultural contexts*, Palgrave/Macmillan (with John Kirk)

Clarke, L., (2011) *Building Capitalism: Historical Change and the Labour Process in the Production of the Built Environment*, 316 pp, paperback, Routledge, London. (first published 1992)

Clarke, L., (2011) *Knowledge, Skills, Competence in the European Labour Market: What’s in a Qualification?* With Brockmann, M., Hanf, G., Méhaut, P., Westerhuis, A., Winch, C. Oxford, Routledge paperback

Clarke, L., (2010) *Bricklaying is more than Flemish bond: bricklaying qualifications in Europe*, with Brockmann, M. and Christopher Winch (editors) Brussels/London: CLR

Druker J***.*** (2009) *Reward management: a critical text* (Editor - with G. White) Routledge, Introduction, co-authored with G. White; 1-22 & Chapter 5 ‘Wages and low pay’: 100 -119.

**Book chapters**

Wall, C., (2017) Constructing Brutalism: in situ knowledge and skill in post-war Britain, in *Producing Non-Simultaneity: construction sites as places of progressiveness and continuity* eds., Eike-Christian Heine and Christoph Rauhut, Ashgate, forthcoming.

Clarke L. (2017) ‘Contradictions between Artisan and Wage Labour Production: Non–Simultaneity in the Building of Somers Town from the End of the Eighteenth Century’, in *Producing Non-Simultaneity: construction sites as places of progressiveness and continuity* eds., Eike-Christian Heine and Christoph Rauhut, Ashgate, forthcoming

Clarke L. (2017) ‘Women in the building sector’, in *Women, work and health,* European Trade Union Institute, forthcoming

Clarke L. Gleeson C. and Wall C. (2017) ‘Women and Low Energy Construction in Europe: a new opportunity?’ in *Gender and Climate Change in Rich Countries: Work, Public Policy and Action,* Routledge

Clarke L., Michielsens E. and Snijders S. (2017) ‘Misplaced Gender diversity policies and practices in the British construction industry: developing and inclusive and transforming strategy’, in *Value Management in Constructon,* edited by Fidelis Emuze and John Smallwood, Taylor and Francis/Routledge, forthcoming

Wall C. (2016) New Notions of Value in Modern Architecture, in *Modern Futures*, eds. Craggs, R., and Neate, H,. London: Uniform Books

Clarke L., and Winch C. (2016) ‘Lessons from abroad: the need for employee involvement, regulation and education for broad occupational profiles – the case of construction’ in *Where next for apprenticeships?,* Policy Report, London: Chartered Institute Personnel Development (CIPD), Chapter 8, pp. 54-59

Clarke L. and Janssen J. (2016) ‘Wage Labour Relations in Britain and the Germanies (FRG/GDR) during the 1970s’ Inflation: the case of the construction industry’, in eds Michel-Pierre Chélini and Laurent Warlouzet, *Slowing prices down: Adaptation of States and European Economical Actors to the Inflationary Fever in the 1970s/ Calmer les prix: l’adaptation des Etats et des acteurs économiques européens à la fièvre inflationniste des années 1970,* Paris: Presses de SciencesPo

Clarke L. and Janssen J. (2016) ‘Explaining diverging VET systems and approaches in the post-war construction sector: the examples of Britain and Germany, in *History of Vocational Education – Concepts, Cases and Challenges,* edited P. Gonon, publisher Peter Lang

Wall, C., (2015)‘Modular Men: Architects, labour and standardisation in mid 20th century Britain’ in *Industries of Architecture,* eds, Amhoff, T. Beech, N and Lloyd-Thomas, K,, Routledge.

Beech N., Clarke L. and Wall C. (2015) ‘On Site’, in *Industries of Architecture,* edited Nick Beech, Katie Lloyd Thomas, Tilo Amhoff, Routledge, forthcoming

Clarke, L., and Wall, C. (2014) ‘Are women ‘not up to’ working in construction – at all times and everywhere?’ *Chapter 1* in *Building the Future: women in construction*, edited by Meg Munn MP, London: The Smith Institute.

Clarke L., (2014) ‘Building by Direct Labour: the significance of Direct Labour Organisations in the provision of public housing in the UK 1890-1980’ in eds., Campbell, J, Andrews, W, et.al *Proceedings of the first Construction History Society Conference,* Construction History Society.

Wall, C., (2014) ‘Recording the ‘Building World’: how oral history transforms construction history’ in eds., Campbell, J, Andrews, W, et.al *Proceedings of the first Construction History Society Conference,* Construction History Society.

Clarke L., McGuire C, Wall C. (2012) ‘The significance of building labour to the production of the built environment’, in eds Carvais R, Guillerme A, Nègre V, and Sakarovitch J. *Nuts and Bolts of Construction History Vol II,* pp 107-114

Clarke L, McGuire C., and Wall C. (2012) ‘The changing and distinct character of construction labour in Britain’ in eds Dainty A. and Loosemore M., *HRM in Construction: Critical Perspectives,* Taylor and Francis (Oxon)

Druker, J. (2012) ‘Reward management in construction’. In Dainty, A. and Loosemore, M. (2012) *Human Resource Management in Construction: critical perspectives*: 252 - 279. Routledge, London

Clarke L, Brockmann M., and Winch C. (2011)‘Europäische Qualifikationen und unterschiedliche Kompetenzkonzepte’ in ed. Fischer M., Becker M. and Spöttl G, *Kompetenzdiagnostik in der beruflichen Bildung – Probleme und Perspektiven,* Frankfurt am Main: Peter Lang

## Clarke Linda and Wall Christine (2011) ‘Skilled versus Qualified Labour: the exclusion of women from the construction industry’ in Davis M. (ed) Class and Gender in British Labour History, Merlin Press

Wall C., Clarke L., McGuire C. (2012) ‘Concrete Constructors: oral history accounts of building work on a large, complex site in 1960s Britain’ in eds Carvais R, Guillerme A, Nègre V, and Sakarovitch J. *Nuts and Bolts of Construction History Vol II,* pp 125-133

Wall, C., (2011) ‘Representing identity and work in transition: the case of South Yorkshire coal mining communities in Britain’,(with John Kirk) , in Kirk, J., Contrepois, S., and Jefferys, S. eds. *Changing work and community identities in European regions: perspectives on past and present*, Basingstoke: Palgrave Macmillan.

Chan P., Clarke L. and Dainty A. (2010 and paperback 2012) ‘The Dynamics of Migrant Employment in Construction: can supply of Skilled Labour ever match Demand?’ in *Who needs migrant workers: labour shortages, immigration and public policy*, ed. Ruhs M. and Anderson B., Oxford University Press

Clarke L. , Brockmann M., and Winch C. (2010) ‘The distinct nature of work-based VET in England: a reflection of employer interests?’ in F. Rauner and E. Smith (eds) *Rediscovering Apprenticeship*, Dordrecht: Springer

Nelson S. (2010) ‘Residential intensification, family housing and education provision’ in Manzi, T., Lucas, K., Lloyd-Jones, T. and Allen, J (Eds) *Social Sustainability in Urban Areas*. London: Earth Scan

Wall C. (2009) ‘Biography, Education and Civic Action: Teaching Generations and Social Change’ *in Theorising Identities and Social Action,* ed M. Wetherell, (with J. Martin, and J.Kirk) Palgrave/Macmillan

**Refereed Journal Articles**

Wall, C., (2017) Sisterhood and squatting in the 1970s: feminism, housing and urban change in Hackney, *History Workshop Journal*, Spring (82) 1 Oxford University Press.

Wall, C. (2017) “We don’t have leaders! We’re doing it ourselves!”: squatting, feminism and built environment activism in 1970s London, *Architecture and Culture*, v5, forthcoming

Wall C., (2017) ‘Nuclear prospects: Sizewell A nuclear power station and the spatial and social disruption of a rural community, 1961-66’, Nuclear History Special Issue, *Contemporary British History,* forthcoming

McGuire C., Clarke L. and Wall C. (2016) ‘Through Trade Unionism you felt a belonging – you belonged’: Collectivism and the Self-Representation of Building Workers in Stevenage New Town’, *Labour History Review,* Vol. 81, Issue 3, pp 211-236

Druker, J. (2016) Blacklisting and its legacy in the UK construction industry: employment relations in the aftermath of exposure of the Consulting Association. *Industrial Relations Journal* (3\*) 47, (3) May: 220–23. DOI:10.1111/irj.12139

Druker, J. (2016) book reviews of Daniel Berliner, Anne Regan Greenleaf, Milli Lake, Margaret Levi and Jennifer Noveck *Labour Standards in International Supply Chains:**Aligning Rights and Incentives.* Cheltenham: Edward Elgar, 2015, £75 hbk, 224 pp. and Colin C Williams *Confronting the Shadow Economy:**Evaluating Tax Compliance and Behaviour Policies* Cheltenham: Edward Elgar, 2014, 288 pp. *Work Employment and Society*

Clarke, Linda (2016) book review of *Blacklisted: The Secret War between Big Business and Union Activists,* by Dave Smith and Phil Chamberlain, published in *British Journal of Industrial Relations,* 54:2 June, pp 449-450

Clarke L. Gleeson C. Winch C. (2016) ‘What kind of expertise is needed for low energy construction?’, *Construction Management and Economics,* 34, published 31 October.

Gleeson C P. (2015) Residential heat pump installations: the role of vocational education and training. *Building Research & Information*. Published online: 11 Sep 2015 DOI: 10.1080/09613218.2015.1082701

Clarke L. and Wall C. (2015) ‘Women and Low Energy Construction in Europe’ in *Women and Environments,* No 94/95, Fall 2014/Winter 2015, pp. 26—27

Clarke L. and Winch C. (2015) ‘Have Anglo-Saxon concepts really influenced the development of European qualifications policy?’, for special issue of *Research in Comparative and International Education,* edited Dina Kuhlee and Andrea Laczik, forthcoming

Clarke L, Winch C. and Brockmann M. (2014) ‘Der Widerspruch zwischen nationalen Berufsbildungssystemen und dem europäischen Arbeitsmarkt: der Fall der Maurerqualifikationen’, *WSI Mitteilungen,* 1

Michielsens M., Bingham C., and Clarke L. (2014) ‘Managing diversity through flexible-work arrangements: management perspectives’, *Employee Relations,* Vol. 36, No 1, pp 49-69

Druker, Janet and White, Geoffrey (2013) ‘[Employment relations on major construction projects: the London 2012 Olympic construction site’.](http://gala.gre.ac.uk/10554/) *Industrial Relations Journal*, 44 (5-6). pp. 566-583.

Gleeson, C P and Lowe, R (2013) ‘[Meta-analysis of European heat pump field trial efficiencies’.](http://westminsterresearch.wmin.ac.uk/13155/) *Energy and Buildings*, 66 . pp. 637-647.

Bingham C, Clarke L, Michielsens E., and van der Meer M. (2013) ‘Towards a social model?: British and Dutch disability policies in the health sector compared’ in *Personnel Review,* Vol. 42, No 5, pp 613-637

Druker, J. and White, G. (2013) ‘Employment relations on major construction projects: the London 2012 Olympic construction site’. *Industrial Relations Journal* 44 (issues 5- 6) November: 566 – 583

McGuire C., Clarke L. and Wall C. (2013) ‘Battles on the Barbican: the struggle for trade unionism in the British building industry 1965-7’, *History Workshop Journal,* 75, Spring, pp. 33-57

Clarke L., Winch C. and Brockmann M. (2013) ‘Trade-based skills versus Occupational Capacity: the example of bricklaying in Europe’, *Work, Employment and Society,* December, 27(6), pp 932-951

Dalton K. and Druker J (2012), ‘Transferring HR concepts and practices within multi-national corporations in Romania; the management experience’, *European Management Journal* (2012)**,** 588-602

Nelson S. (2011) 'Stewardship of the Built Environment in England: Lessons for Developing Sustainable Communities' *Planning Practice and Research,* 26, 1, 1-19.

Clarke L., Donnelly E., Hyman R., Kelly J., McKay S. and Moore S. (2011) ‘What’s the Point of Industrial Relations?’ in *The International Journal of Comparative Labour Law and Industrial Relations,* Vol. 27, Issue 3, September, pp 239-254

Brockmann M., Clarke L. and Winch C. (2010) ‘The Apprenticeship Framework in England: a new beginning or a continuing sham?’ *Journal of Education and Work*, Vol. 23, No. 2, March, pp 111-127

Clarke L. and Wall C. (2009) ‘A woman’s place is where she wants to work’: barriers to the entry and retention of women into the skilled building trades’, in *Scottish Labour History,* Vol. 44, pp. 16-39

Brockmann M., Clarke L. and Winch C. (2009) ‘Competence and competency in the EQF and in competence-based VET systems: different conceptions and realities in England, France, the Netherlands and Germany’ in special issue of *Journal of European Industrial Training* on ‘European approaches to competence’ guest edited by Jonathan Winterton,*,* Vol 33, No 8/9, pp 787-799

Clarke L., van der Meer M., Bingham C., Michielsens E., Miller S. (2009) ‘Enabling and disabling: disability in the British and Dutch construction sectors’, in *Construction Management and Economics,* 27, April-June, pp. 555-568

Brockmann M., Clarke L. and Winch C. (2009), ‘Difficulties in Recognising Vocational Skills and Qualifications across Europe’ *Assessment in Education: Principles, Policy & Practice,* Vol. 16, No. 1, March, pp. 97-109

Wall C. (2009) (with John Kirk) ‘Resilience and loss in work identities: a narrative analysis of some retired teachers’ work-life histories’ *British Educational Research Journal* <http://www.informaworld.com/10.1080/01411920903018216>

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Brockmann M., Clarke L. and Winch C. (2008) ‘Länderübergreifende Gleichwertigkeit beruflicher Fertigkeiten und Qualifikationen’, *Berufsbildung in Wissenschaft und Praxis,* Zeitschrift des Bundesinstituts für Berufssbildung, 5.

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Clarke L. and Gribling M. (2008) ‘Obstacles to diversity in construction: the example of Heathrow Terminal 5’ in *Construction Management and Economics,* October, 26/10, pp 1055-1

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Gleeson C. (2008) *Building Services and the Code for Sustainable Homes*. RICS COBRA

**Research reports**

2017 Suzy Nelson and Kerry Bobbins *Designing Cities: A study of collaborative interdisciplinary practice in the London area*, with the support of the Quinton Hogg Trust

2017 Colin Gleeson, Phillip Biddulph, Robert Lowe, Jenny Love, Alex Summerfield, Eleni Oikonomou, Jez Wingfield & Chris Martin (February 2017) *Analysis of Heat Pump data from the Renewable Heat Premium Payment Scheme (RHPP) to the Department of Business, Energy and Industrial Strategy: Compliance with MCS Installation Standards.*

2017 Jenny Love, Alex Summerfield, Phillip Biddulph, Jez Wingfield, Chris Martin, Colin Gleeson, Robert Lowe (February) *Investigating variations in performance of heat pumps installed via the Renewable Heat Premium Payment (RHPP) Scheme.*

2017 Robert Lowe, Lai Fong Chiu, Eleni Oikonomou, Colin Gleeson, Jenny Love, Jez Wingfield, Philip Biddulph (March) *Analysis of data from heat pumps installed via the Renewable Heat Premium Payment (RHPP) Scheme: Case Studies Report from the RHPP Heat Pump Monitoring Campaign*

2016-7 Robert Lowe, Alex Summerfield, Phillip Biddulph, Colin Gleeson, Eleni Oikonomou, with additional input from Jez Wingfield & Chris Martin (March 2016, Revised and re-issued: March 2017) *Analysis of data from heat pumps installed via the Renewable Heat Premium Payment (RHPP) Scheme to the Department of Energy and Climate Change (DECC): RHPP Heat Pump Study - Note on Systematic Errors in Physical Monitoring Data*

2015 May: *No more softly, softly: review of women in the construction workforce,* report presented to Women in Construction symposium participants

2015, February: *‘Raising the Bar’ for the representation of women in the construction workforce: findings from the Encompass survey,* Report presented to Thames Tideway Project

**Media articles, Pamphlets, newsletters**

Clarke, L. and Druker, J. (2017) ‘*The construction industry: a suitable case for treatment’*. Paper presented at the Labour Market Exploitation: Warwick University IRRU/GLAA workshop 10th May 2017

## Clarke L. (2017) ‘Brexit and its implications for construction labour in Britain’ in Build Magazine, April

## Clarke L. (2016) ‘Can the construction industry afford to continue to be so exclusive?’ in Build Magazine, August, pp. 74-5

Clarke L. (2016) ‘Forty years on from the Barbican dispute’ in *London Hazards Centre Magazine,* Issue No. 116, July

## Clarke L. (2016) ‘Migrant workers, safety and gender balance – construction needs Europe’ in Infrastructure Intelligence, June 17

Gleeson C.P. (2016)New build, Retrofit, LZC technologies in *CLR News 4/2016 Material, technology, work organisation – construction work in transition.*

*CLR News* 4/2015, Edited Colin Gleeson and John Calvert, ‘Construction Labour, Work and Climate Change’, 82pp

Gleeson, C.P. and Calvert, J. (2015) Just transition (Editorial) in *CLR News* 4, pp. 4-9.

Gleeson C.P. (2015) Climate change and the power of naming - Anthropocene versus Capitalocene (Review essay on 'The Capitalocene' Part I and Part II , by Jason W Moore), in *CLR News 4*, pp. 60-65.

Gleeson, C.P. (2015) On the energy [R]evolution: a sustainable world energy outlook 2015, in *CLR News* 4, pp. 30-38.

*CLR News1/*2014, sub-edited Colin Gleeson,‘Energy Saving Construction’, 60pp

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Gleeson C. (2014) ‘Work in a Warming World (W3): Labour, Climate Change, and Social Struggle, University of Toronto, 29 November - 1 December 2013’ in *Climate change and construction labour, CLR News 1,* pp31-36

Wall C., Clarke L., McGuire C., and Muñoz-Rojas O. (2012a) *The Art of Concrete: Building the South Bank Arts Centre,* London: ProBE

Wall C., Clarke L., McGuire C., and Muñoz-Rojas O. (2012b) *Building a Community: Construction Workers in Stevenage 1950-1970,* London: ProBE

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Brockmann M., Clarke L. and Winch C. (2010) ‘Bricklaying qualifications, work and VET in Europe’ *CLR News 1,* pp. 7-41

Stuttard G. interviewed by Clarke L. and Gold M. (2008) ‘Trade union education: some thoughts from the past’ in *Post-16 Educator,* Issue 48, November-December 21-23

**Conference papers**

Conference papers of ProBE members are too numerous to list. As well as one-off conferences, particular annual conferences are targeted including: AHRA International Conference; British Universities Industrial Relations Association; Chartered Institute of Personnel and Development; European Group of Organisation Studies; European Social Science History Conference; INAP; Industrial Relations European Conference; International Conference on HRM; International Construction History; International Labour Process; International Working Party on Labour Market Segmentation; Labour History Society; LondoniCity; Oral History Society; Work, Employment and Society; World Economic History Conference; Association of European Schools of Planning congress; and International conferences in housing, architecture and planning.

**2.3 Objectives, goals and related activities for the future**

**Five-Year Strategy: 2013-2018**

**Developing ProBE**

ProBE has successfully linked both fABE and WBS through its programme of research and related events and also through the participation of those staff members actively engaged in research on funded projects and publications falling within its remit. From the outset, it comprises a set of strengths emanating from the existing and proposed projects of a strong core of experienced and well-known researchers with:

* well-respected academic reputations based on an extensive range of academic publications and successfully completed research projects
* a highly successful history of securing research funding from reputable bodies including Nuffield Foundation, European Commission, EPSRC, ESRC, Joseph Rowntree Foundation and Leverhulme Trust
* a wide range of connections with external bodies both national and international
* strong personal commitment to the aims and objectives of ProBE.

It is crucial to maintaining its presence that ProBE be seen as a hub of debate and activity and of critical and ground-breaking research and comment on the production of the built environment and the policies related to this; it should not be afraid of controversy. This does not mean that it will not also take on consultancy projects that fit into its programme and contribute to its development and to extending theory and debate. The aim of ProBE is primarily to contribute to and extend knowledge and understanding of the production of the built environment, in particular the social processes that underlie this. Any strategy therefore has to involve continual assessment of how far this is being achieved and to engage with a wide audience, above all policy-makers, practitioners and fellow academics. The following five-year strategy addresses its consolidation and progression to an internationally renowned centre for research into the built environment.

# 2013-15 Consolidation Years

These years marked a new life for ProBE. The regular seminars and events put in place in the previous years as well as dissemination of previous projects continued. ProBE developed an international reputation for path-breaking projects, in particular through the partnership and research programme with York University, Canada, and that this in turn has attracted visiting Professors, Fellows and PhD students.

**Research Contribution**

ProBE is distinct in its focus on the social relations involved in both producing and consuming the built environment and in its multi-disciplinary and multi-media approach. Being situated in the centre of one of the largest metropolises in Europe, it is ideally situated for this research and especially well placed in being able to draw on expertise from both WBS and faBE. It seeks to build up a coherent portfolio of high quality, original research and to share this with a wide audience, both local and international, in various ways:

* as written text through research reports and publications;
* as visual material through films and exhibitions;
* orally, through specially organised seminars and conferences.

The research addresses critical social and policy issues, including those that challenge established orthodoxies, and is concerned with the improvement of social relations of production. It seeks above all to develop a sound theoretical framework for understanding the changing process of producing the built environment – both historically and today – and to provide empirical analysis and evidence to support policies directed to its improvement.

**Research Environment**

As describedabove, an important aspect of ProBE is the support and encouragement given to staff and researchers to publish in academic refereed journals and to write and submit research proposals, including through mentoring and staff development. In 2015-6 major multi-disciplinary research proposals were submitted (see above p. 12-13).

**2015-18 Building an International Profile**

As ProBE’s reputation spreads there is a danger that it will become a victim of its own success in being unable to follow up invitations to act in a consultancy role and in undertaking short-term research projects suggested by industry. Funding for research support, in the form of a research fellow able to undertake research activities as well as administrative duties, is necessary and has been given by WBS and Dr Melahat Sahin-Dikmen joined ProBE in 2017. A permanent space on Marylebone campus for ProBE members, visiting Professors and Scholars, and the increasing physical output, of pamphlets, books, research archives etc., of a successful Centre would perhaps be beneficial, as well as specific funding for ProBE activity. Currently too support for seminars and symposia (including catering and travel reimbursement) and for developing research (e.g. travel for visiting sites and interviews, research publications) has been provided largely by WBS.

***Seminars***

These continue as central to ProBE’s core objectives, including on:

* The role of visual representations, and more generally planning, including for labour
* A critical review of the Green Deal and Build up Skills, comparing different countries
* The effect of the financial bubble on the production/use of the existing stock
* The fragmentation of the construction industry and destabilisation of the employment contract: how can we organise work and employment

***Symposia***

A symposium on *Post-war social housing provision: history and policy for the current crisis* with cross-faculty support from Humanities and Social Sciences will also be organised.

***Research proposals***

A proposal will be submitted to the Leverhulme Trust on:

*Council Housing 1960 -1988: a history of local authority Direct Labour Organisations,* Proposal to Leverhulme Trust, 2 years, Wall and Clarke (joint applicants)

Between 1960 and 1980 local authorities in England and Wales completed 2,385,640 permanent dwellings (Finnimore, 1989:261) and employed 12 per cent of the total construction workforce. The role of local authorities and the building workers they employed has thus been critical to the successful realization of public sector investment in social housing and public infrastructure construction, including the repair and maintenance of the public building stock, but there is no definitive history of their operations. This proposal seeks to remedy this by a detailed examination of a number of major DLOs using oral history, documentary and visual evidence to elicit an account which has great relevance to the current housing crisis.

***Publications***

As well as refereed journal articles, three major books, already in progress, with two accepted into a paperback series on *Work in a Warming World* published by Routledge, will be submitted for publication during 2017-8:

* Wall, C., and Clarke, L., *Constructing Post-war Britain: revealing the role of building labour 1950-70,*
* Clarke, Gleeson and Wall (Eds.) *Thermal Literacy: towards a social framework for producing low energy architecture in a warming world,* Routledge Climate change series
* Clarke L. and Lipsig-Mummé, C., *Labour, Work and Climate Change: a labour process perspective,* Routledge Climate Change series

These are years in which international links are consolidated, research projects carried out, high quality articles published, new proposals submitted, consultancy agreements renewed and the Centre expands with the addition of new permanent members of staff and a strong cohort of PhD students.