Retrofit in Practice: what next? 14.11.14 - 2 to 5 pm in the Planning Studio on the 3rd floor of Claremont Tower
Workshop chaired by Sofie Pelsmakers and Dr David Kroll at 'Industries of Architecture Conference' , Newcastle University
Architectural Humanities Research Association International Conference – www.retrofitinpractice.co.uk

RETROFIT IN PRACTICE: WHAT NEXT?

To meet the UK government's ambitious carbon reduction standards, existing buildings will need to be upgraded to meet high fabric efficiency standards. But what are the challenges faced? Which policies exist to encourage this large-scale retrofit – and what are the barriers? How much do we currently know about how well these buildings perform and what standards will they need to meet?
What could some of the unintended consequences be of fabric upgrade? Will planning support or hinder interventions? How can retrofit successfully take account of the building history? Is there a role for architects in the upgrade of existing structures? And, why not simply demolish and start anew?

Abstracts were invited for speakers from academia and industry to address the above.

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RETROFIT IN PRACTICE: SUMMING UP

Firstly – another big thank you to Saint Gobain and ECD architects who sponsored our workshop ' Retrofit in practice what next?'

Our workshop was set against the background of the UK's ~26.7 million existing dwellings and 1.8 million non-domestic buildings. The energy use of housing alone, which is mostly used to keep people warm in their homes, contributes to about 1/3rd of the UK's carbon emissions. So there is a real urgency to reduce this energy use in buildings: thermal comfort of occupants, avoiding fuel poverty, aesthetic upgrades as part of building maintenance when buildings meet or exceed their intended lifespan, and ofcourse also stopping the reliance on burning fossil fuels to operate and construct these buildings, which are a finite resource and contribute to global warming.

The UK, and the rest of Europe needs to reduce the carbon emissions from this energy use to pretty much zero in the existing building stock by 2050, while new buildings will have to meet that standard much earlier (before 2020). To illustrate the scale of the problem: there are more existing buildings that need to be upgraded monthly to meet this target than there are new build buildings built yearly in the UK.

This brings with it a whole host of challenges, but also opportunities and this is what we really tried to capture in our workshop. Many of the contributions pointed towards solutions by raising relevant questions. By doing that, the presenters also touched on key issues that are related to the retrofit challenge.

Some topics that were raised included: project management, assessment methods, new models and tools, procurement, testing performance, community benefits, unintended consequences of retrofit, aesthetic consequences and approaches, and lets not forget the people who live and work in these buildings, and ofcourse the architect's role in this process.

A quote from Sir Terry Farrell's review of architecture and the built environment earlier this year for government touches on this last point. He stated: "*An architect can add value to **retrofitting** by making efficient and holistic decisions on any scale of project, while understanding the broader **conservation issues**.*"

Other questions that were raised were:

- Can retrofit be an opportunity to also offer better spaces for community and amenity uses? We saw some very good examples responding to these questions for both smaller dwellings as well as high-rise housing blocks.
- Can qualitative building characteristics be quantified in assessment tools and road maps? We saw some work in progress in the US and UK/EU.
- Another issue is Post Occupancy and Building Performance Evaluation to ensure that the retrofit performs as intended – to close the current performance gap. We saw some interesting testing of solutions and new modelling to tackle these problems. And our workshop sponsor Saint Gobain and ECD architects are undertaking some relevant research in this area.

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During discussion, it became clear that terms such as 'retrofitting', 'conservation' and 'heritage' have overlaps but are also not clearly defined at the moment.

For example what do we mean by conservation and heritage? What is the value in listed buildings we are trying to protect, is it the entire building or a specific aspect? And, if it is only part of a building that is 'valued', perhaps listed building consent – considered a barrier to upgrading buildings – may not be necessary at all?

What do we mean by retrofitting? Does retrofit mean just adding, or changing, or can it also mean taking away? Or any of these together? Does retrofitting include renewable technologies as add-ons such as solar panels on a roof? Or is retrofitting's key concern the fabric upgrade?

Should we not touch a heritage building at all? Or is wrapping the building in a new protective, 'conserving' layer part of conservation, as it increases the durability of the building and retains, protects, 'conserves' its structure and purpose? In particular, which parts can we touch and which do we need to leave untouched? Should we make a clear distinction between old and added or should the added match the existing?

Ofcourse some of these issues are subjective, even emotive, but little discussed in depth so far in industry or academia. Perhaps as academics and practitioners it might be timely to consider more consciously the terminology, and our own conceptual approach to retrofitting. What are the consequences for the way we design? does the need for sustainable retrofit require us to critically re-examine some dearly held architectural concepts?

On the other hand, some argued, given the sheer scale and urgency of the task ahead for many buildings which are not listed, we might just need to get job done. If millions of housing are not of any significant quality or aesthetic, can we use the need for sustainable retrofit as an opportunity to enhance the architectural quality of our buildings?

So, there is a huge opportunity for architects, one where we can think creatively, innovatively and imaginatively and establish a new 'environmental architecture poetic', but architects, and architecture education, appear to be missing this significant and real opportunity. To quote Sir Terry Farrell again:

"refurbishment and retrofitting had not been considered to be architectural issues, and these concerns still struggle to be accepted ***as legitimate by the architectural community".***

He also suggested that: *"Architecture schools should include refurbishment and low-carbon retrofitting of old buildings in their curriculum and project work and conservation and heritage issues in course content."*

So, to close our summary, we hope that this is something we can all work towards changing, because retrofitting buildings is real. It is urgent. It is important. It offers great opportunity for a new architectural paradigm. Retrofitting is 'what is next' in architecture for our buildings. Basically it is here to stay, and we need all of you in academia/heritage/practitioners/industry involved. We need to want to be involved in this – for architecture to remain relevant to society.

Sofie Pelsmakers & Dr David Kroll, drawn from discussion with speakers listed overleaf.

RETROFIT IN PRACTICE: PROGRAMME

Time	Speaker	Presentation title
14.00	**Chairs' Welcome – Sofie Pelsmakers & Dr David Kroll**	
14.05-14.15 pm	**Charlie Baker**, Urbed & RED	**A community Green Deal** – making retrofit deliver
14.15-14.25 pm	**Richard Fitton** *(Salford University)*, **David Farmer** *(Leeds Beckett University)* & **Mark Weaver** *(Saint-Gobain)*	**Salford Energy House** – in-depth study of a fabric whole house retrofit
14.25-14.35 pm	**Mark Siddall**, *LEAP*	**Noise and Mechanical Ventilation in Retrofits**
14.35-14.45 pm	**Tim Forman**, *Phd Student, Welsh School of Architecture, Cardiff University*	**Solid wall insulation retrofit in UK dwellings:** drivers and hindrances of consistent quality in installation and delivery
14.45-14.55 pm	**Roger Curtis**, *Historic Scotland*	**Retrofit and older buildings – a conservation approach**
14.55-15.05pm	**Dr David Kroll**, *Anglia Ruskin University*	**Sustainable retrofit:** What happens to truth and authenticity?
15.05-15.25 pm	**Q&A with speakers panel & floor discussion**	
15.25-15.40 pm	**Short break**	
15.40-15.50 pm	**Dr Julian Holder**, *the University of Salford*	**'Interior not inspected'** - the scope for retrofitting listed buildings under the provisions of the Enterprise and Regulatory Reform Act 2013
15.50-16.00 pm	**Carsten Hermann**, *Historic Scotland*	**Heritage significance assessments to evaluate retrofit impacts**
16.00-16.10 pm	**Dr Franca Trubiano**, *University of Pennsylvania*	**Integrated Design and Advanced Energy Retrofits** - Roadmap for Deep Energy Savings and the Merits of 'Soft Knowledge"
16.10-16.20 pm	**Felicity Davies**, *PhD student at UCL*	**The community benefits of retrofitting**
16.20-16.30 pm	**Dr Martin Field**, *Collaborative Centre for the Built Environment, University of Northampton*	**The market impact of architectural design solutions for housing retrofit in the UK**
16.30-16.40 pm	**Nick Newman**, *ECD Architects Head of Sustainability*	**High Rise, Deep Retrofit**
16.40-17.00 pm	**Q&A with speakers panel & floor discussion – closing statements**	

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RETROFIT IN PRACTICE: ABSTRACTS & SPEAKER PROFILES

Workshop Chairs

Sofie Pelsmakers

Sofie is an environmental architect and doctoral researcher at the UCL Energy Institute, where she investigates the actual heat-loss from pre-1919 suspended timber ground floors, heat-loss reduction potential of interventions and their unintended consequences. She is also module leader of the Low Energy Housing Retrofit at UCL MSc Environmental Design and Engineering course and author of The Environmental Design Pocketbook (RIBA Publishing 2012), with a 2nd edition due autumn 2014. Prior to her doctoral studies, Sofie taught at the University of East London and lead a Masters in Sustainable Architecture course. She also co-founded Architecture for Change, a not-for profit environmental building organisation.

Dr David Kroll

Dr David Kroll is an architect with varied experience in both practice and academic teaching. He is currently a lecturer in architecture at Anglia Ruskin University and has previously held lecturing positions at the University of East London in Architectural History and Theory, and at the University of Kent in Architectural Design. He recently completed a PhD at the University of London with focus on the history of housing. He is also working on a collaborative publication that aims to draw on lessons from the past for more sustainable future housing design.

Charlie Baker, Urbed & RED — **A community Green Deal – making retrofit deliver**

BIO

Charlie trained as an architect, returning to it through tenant activism in Hulme, Manchester where he set up the Hulme Community Architecture Project. He was a founder member of the award winning Homes & Work for Change Co-operatives and the Confederation of Co-operative Housing. He co-authored the Hulme Guide to Development and the Community Gateway Model for stock transfer. He set up a design and fabrication co-op whose projects included award winning Republic nightclub in Sheffield which was taken from feasibility to fabrication. He has been working with URBED for 21 years on regeneration projects, sustainable architecture and urban design. He has developed methods for designing neighbourhoods and housing with, rather than for, affected communities. He has developed community controlled intermediate housing market models and student housing co-ops. With Blueprint he has developed new housing forms to meet the challenges of urban development.

He developed designs for the former Spode pottery works, including a temporary exhibition space; and between all this has worked on commercial and public sector masterplans all over the country. Having become an accidental expert in low carbon retrofit, starting with a pilot to take a Victorian semi as close to carbon neutrality as feasible, he has devised retrofit standards, and their management, supply chain, mutual finance and delivery models for the Midlands' Sustainable Housing Action Partnership and AGMA. He led the design work on two of the Retrofit for the Future projects reducing 10 homes by 80% of previous emissions, which won the Local Carbon Refurbishment Award from Sustain Magazine. As part of URBED's sustainability team he has drafted the Greater Manchester Retrofit Strategy, to deliver domestic carbon reduction targets. He has spent the last 4 years helping establish the Carbon Co-op, a co-operative solution to low carbon works in Manchester on site now in the pilot phase retrofitting 14 houses to the 2050 reduction target.

ABSTRACT

Fitting the nations cumulative emissions within the 9.5Gt we have left means drastic demand reduction across every part of life. There's neither the need, the time nor the resource to rebuild. So we need to retrofit all of the nation's housing stock built before this century. Our work on pathways (using a hack of the DECC 2050 Pathway calculator) has shown that meeting the 9.5Gt target is doable if we can reducing the heat needs of the nation's housing stock by 75%. We have proved that reducing houses total average energy use by 80% is technically feasible. Our research suggests it could be financially feasible within 8 years.

But this needs to be done very efficiently. We have devised a full SAP based assessment method with costings built in as well, so that we can tune the measures to those that are the most cost effective. We have done this very simply with high levels of insulation across the whole house and airtightness, passive stack ventilation and topping up with PV.

Our assessment also looks at the long term financial implications so we mostly we have managed to make the recent retrofits work to the 'Golden Rule' with no grant, only 10% ECO and 0% interest loans although in some cases householders have been prepared to pay more for a comfortable house.

We are assuming that we are not yet at the stage when whole streets can be done to this level, but they need to be eventually so we are building systems around being able to handle the management task of multiple retrofits to different houses in different places with different measures - but we are not there yet and the load on designers is still unfeasibly high.

Richard Fitton (Salford University), David Farmer (Leeds Beckett University) & Mark Weaver (Saint-Gobain)

Salford Energy House – in-depth study of a fabric whole house retrofit

BIOs

Richard Fitton is the Technical Manager of the Energy House at the University of Salford, a Victorian House in a climate-controlled lab. He leads the monitoring work undertaken within ABERG and is involved in a number of projects with regards to co-heating, u-Value measurement, as well as product and retrofit package testing within the Energy House. Richard has previously been a Building Surveyor and Energy Manager in the public sector. He also advises on the qualification of SAP Assessors and Green Deal Advisors.

David Farmer is a researcher for the Leeds Sustainability Institute at Leeds Beckett University. His research is primarily involved with assessing the energy performance of buildings; combining in situ fabric and services test methodologies, building forensics and data analysis techniques. His work has included building performance evaluation on new and existing dwellings, as well as in-use monitoring projects. He is currently developing a methodology to characterise whole house heat loss as part of his doctoral research.

Mark Weaver is Project Director for Retrofit for Saint-Gobain in the UK. He is responsible for working across the various Saint-Gobain businesses in Construction Products, Innovative Materials and Building Distribution to present an offer to customers and clients in the retrofit sector. He has been actively involved in understanding and supporting the emerging Green Deal and ECO initiatives for Saint-Gobain as well as industry bodies such as trade associations and SWIGA guarantee agency.

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ABSTRACT
The need to tackle the poor performing existing housing stock is now well accepted and retrofit schemes of various types are running throughout the UK. Data on the performance of systems is still relatively light and in the field it is often difficult to isolate performance from environmental and occupant effects. The Energy House is a pair of recreated Victorian end-of-terrace houses built in an environmental chamber at the University of Salford. Saint-Gobain, including the central R&D resource, worked collaboratively with the University of Salford and Leeds Metropolitan University (now Leeds Beckett) to install fabric insulation measures (floor, walls, roofspace) and replacement high-performance glazing, and to monitor the performance of these interventions against a realistic baseline. A wide array of sensors took over 54 million readings during the conventional retrofit programme and the results achieved were impressive, significantly reducing notional energy use, improving air tightness and creating a more comfortable living environment. There were important lessons to be gained for a system manufacturer as well as the academic understanding of monitoring, testing and modelling techniques from such an in-depth retrofit study.

Mark Siddall, LEAP — **Noise and Mechanical Ventilation in Retrofits**

BIO
Mark Siddall is a Northern England's leading Passivhaus architect. In addition to being a part time senior lecturer at Northumbria University he is principal at low energy architectural practice LEAP. The practice offers architectural services and energy consultancy. He has published over 30 articles and papers on building performance and Passivhaus design. Email: mark@leap4.it

ABSTRACT
Around a third of new dwellings were using mechanical ventilation with heat recovery (MVHR) systems in 2010, and this proportion is anticipated to increase with the more onerous requirements for energy performance in Part L 2014. The rise of retrofit is likely to lead to increased deployment of MVHR within existing homes. An extensive literature review covering over 1000 dwellings demonstrated the potential for noise from mechanical ventilation systems to be a significant constraint upon user operation, with consequent adverse impact upon the provision of ventilation and indoor air quality (Harvie-Clark and Siddall, 2013).
As noise from mechanical ventilation systems is not currently regulated within the UK, it is rarely considered by the design team. It is demonstrated that there is a need for further research in order to determine appropriate, culturally derived noise levels that are suitable for adoption within the UK. Various indoor noise and outdoor breakout noise levels should be considered within this research.

Tim Forman, Phd Student, Welsh School of Architecture, Cardiff University — **Solid wall insulation retrofit in UK dwellings: drivers and hindrances of consistent quality in installation and delivery**

BIO
Tim Forman is a third-year PhD student at the Welsh School of Architecture in Cardiff University. His current research interests lie in socio-technical topics in retrofit and refurbishment. He has a background in architectural theory and science and before returning to academic work he spent several years working in the building trades in green and conventional construction.

ABSTRACT
This research takes place at a time of explosive growth in solid wall insulation (SWI) retrofitting; driven largely by government mandates, the total number of UK installations has roughly doubled in the past two years. The SWI retrofit industry has a legacy of varying build-quality and appropriateness in specification. This research examines the changing nature of the industry and analyses the myriad factors that shape it today. The research employs qualitative and ethnographic methods. Siting of the work is concentrated in a range of area-based retrofit projects and installer training programmes; more broadly, the research captures a broad actor-network that includes industry professionals, commercial bodies, government policy instruments, training providers, manufacturers, clients, and occupants. An extended study of a leading SWI installation company forms the primary component of field research. Findings identify the pivotal role of policy instrumentation in the industry. The research highlights recurrent impediments to installation quality, including 'short-termism', financial pressure, immature technology and inconsistent technical understanding. Finally, the project outlines potential mechanisms for improving the delivery of SWI retrofits, including enhanced training and certification programmes, expanded roles for surveyors and inspectors, advanced quality assurance and management programmes, materials and technologies innovation, and review of government policy instrumentation.

Roger Curtis, Historic Scotland | **Retrofit and older buildings – a conservation approach**

BIO
With a building conservation contracting background Roger Curtis joined Historic Scotland in 2006, and is now responsible for managing the Technical Research Programme. While energy efficiency in traditional and historic buildings is a big focus, other work continues on traditional materials such as lime, lead stone and slate.

ABSTRACT
The recent drive to insulate and thermally upgrade the UK domestic housing stock has highlighted some significant issues of perception, expectation and intervention in design and delivery. In the case of older buildings their upgrade has long been thought of as technically challenging; The lack of familiarity with older structures, especially in the insulation sector, mean that there is little understanding of traditional structures, some conservation restrictions and the suitable measures available. Work by Historic Scotland, following many principles established in building conservation, has developed a suite of fabric interventions that seek to respect the original fabric both technically and aesthetically and that are suitable to protected or unprotected structures. These measures involve modest disruption, minimise waste and ensure that a healthy indoor environment is maintained for occupants. They also deliver realistic levels of thermal improvement and comfort.

Dr David Kroll, Anglia Ruskin University | **Sustainable retrofit: What happens to truth and authenticity?**

BIO
Dr David Kroll is an architect with varied experience in both practice and academic teaching. He is currently a lecturer in architecture at Anglia Ruskin University and has previously held lecturing positions at the University of East London in Architectural History and Theory, and in Architectural Design at the University of Kent. He recently completed a PhD at the University of London with focus on the history of housing. He is also working on a collaborative publication that aims to draw on lessons from the past for more sustainable future housing design.

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ABSTRACT
Sustainable retrofit generally means adding something new to an existing building. Apart from technical concerns, what implications are there in terms of architectural theory? Is it possible that the requirement for sustainable retrofit forces us to rethink dearly-held and core concepts that still drive much of contemporary architectural design? This short paper does not claim to give over-simplified answers to complex and often project-specific questions. However, the author will briefly touch on the origins of key contemporary architectural concepts of 'truthfulness' and 'authenticity', and question their often uncritical application today. Finally, the paper will raise questions if and how these concepts could be reinterpreted and updated to take into account our present needs for sustainable retrofit.

Dr Julian Holder, the University of Salford

'Interior not inspected' - the scope for retrofitting listed buildings under the provisions of the Enterprise and Regulatory Reform Act 2013

BIO
Dr Julian Holder is Lecturer in the History and Theory of Architecture at the University of Salford. He was previously Inspector of Historic Buildings with English Heritage, and is a former Director of the Scottish Centre for Conservation Studies at Edinburgh College of Art School of Architecture.

ABSTRACT
The conservation of historic buildings and the conservation of energy represented by retrofit would seem to be natural bedfellows. However, too often they are seen to be in conflict due to the restrictions placed on retrofit by the operation of the planning system. This paper will argue that this is not, and need not, be the case. Under the provisions of the ERR Act which came into force in April 2014 various changes, such as the introduction of Certificates of Lawfulness, and Heritage Partnership Agreements, allow re-assessment of the significance of a listed building to permit a range of pre-agreed alterations to the fabric where this does not necessarily erode the significance of the listed building. This is particularly the case with internal fit-out where the architectural and historic interest has not been assessed at the time of listing – a situation normally conveyed by the simple sentence at the end of a list description 'Interior not inspected'. If followed through the process outlined in this paper would bring benefits not only to retrofit but result in an improved National Heritage List for England.

Carsten Hermann, Historic Scotland

Heritage significance assessments to evaluate retrofit impacts

BIO
Carsten Hermann is a conservation architect working at Historic Scotland. He researches energy efficiency of historic buildings and manages Historic Scotland's participation in the EFFESUS project.

ABSTRACT
Retrofitting buildings inevitably impacts on their heritage significance. Although only 3% of the UK's building stock is heritage designated (through 'listing'), about 20% of the total is older than 100 years and, therefore, of heritage significance. Many of these buildings are located in urban settings and contribute significantly to cultural identity and place making. The retrofitting of these buildings should therefore minimise any negative impacts on the buildings' heritage significance.

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To allow easy, systematic and transparent assessments of the heritage significance of historic buildings and to balance these with the impacts of retrofit solutions, an assessment system has been developed as part of EFFESUS, a European project researching energy efficiency for historic districts. The system will be one of six modules of a Decision Support System to evaluate retrofit measures at district scale.

The assessment system will allow for heritage significance assessments on the basis of building and urban elements and will be flexible with regard to the detail used, making it equally usable for buildings of minor heritage significance and monuments of high significance. This position statement will present the assessment system, bedded in its development context, and illustrate its practical applicability with examples from the UK.

Note
The heritage assessment system has already been described in Eriksson et al. (2014), including a case study in the city of Visby, Sweden. This position statement will be a summary of that paper and will, in addition, illustrate the intended use of system with examples from the UK.

Dr Franca Trubiano, University of Pennsylvania

Integrated Design and Advanced Energy Retrofits - Roadmap for Deep Energy Savings and the Merits of 'Soft Knowledge"

BIO

Franca Trubiano is Assistant Professor at the University of Pennsylvania, Registered Architect, and funded researcher with research areas in construction technology, materials, tectonic theories, integrated design, architectural ecologies, and high performance buildings. See is President Elect of the Building Technology Educators Society (BTES) and since 2013, an Editorial Board Member of the Journal of Architectural Education. Franca is editor and co-author of the recently published Design and Construction of High Performance Homes: Building Envelopes, Renewable Energies and Integrated Practice (Routledge Press 2012), and has published on high performance design in Architecture and Energy (eds. Braham and Willis, Routledge Press, 2013) and the forthcoming Architecture and Uncertainty (ed. Benjamin Flowers, Ashgate Press, 2014). Franca is a Principal Investigator and inaugural member of the Consortium for Building Energy Innovation, a US Department of Energy sponsored project located whose funded research is focused on the development of Integrated Design Roadmaps of use by all members of the AEC industry in the pursuit of Advanced Energy Retrofits.

ABSTRACT

Achieving significant energy reductions in the renovation of small to medium-sized commercial buildings remains an elusive, yet important goal. This sector of the building industry is by nature conservative, apprehensive of change and risk averse. Not surprising, given their struggles to remain afloat in challenging economic times. However, it is precisely this group of building owners who would most benefit from energy-based improvements to the architectural fabric and engineering systems of their buildings. In this light, the research discussed in this presentation addresses the development and deployment of market-oriented tools for accelerating the pace of advanced energy retrofits completed by this sector over the next 20 years in the United States. Committed to a significant increase in the number of successful retrofits that achieve a minimum energy savings of 20%, the research team at the T.C. Chan Center of the University of Pennsylvania has developed a protocols based roadmap for project management of advanced energy retrofits.

Designed to assist entire project teams in achieving deep energy savings while renovating existing buildings, the Integrated Design Advanced Energy Retrofit (IDAER) Roadmap offers process aligned practices of use to owners, project managers, financial investors, architecture, engineering, and construction (AEC) professionals, as well as energy modeling and measurement consultants, typically involved in AERs. The ID AER Roadmap delivers project management-based tools of use by teams in creating precisely the collaborative environment that supports significant energy reductions. The IDAER document suite will be introduced; including its Overview Brochure with concepts of integrated design and advanced energy measures tailored to a general audience; the Reference Manual for delivering key information attendant to the retrofits -- such as financing, management of green leases, energy audits, and benchmarking; and the Project Team Guide used by building industry professionals when completing an advanced energy retrofit. Moreover, an initial set of observations will be shared that have resulted from the deployment of the IDAER Roadmap in five demonstration projects currently underway for testing and verifying the Roadmap's content and protocols.

This project is being developed at the Consortium for Building Energy Innovation (CBEI), a research initiative sponsored by the Building Technologies Office of the US Department of Energy and we would welcome an opportunity to share its content with the panel and audience at Retrofit in Practice.

Felicity Davies, PhD student at UCL **The community benefits of retrofitting**

BIO

Felicity is an EngD candidate at UCL, researching how large scale retrofitting can benefit communities. She has a background in Architecture.

ABSTRACT

Large scale retrofitting of housing is essential if we wish to fulfil 2050 targets and mitigate the societal risk of climate change. However, current environmental impetus placed on retrofitting has meant there is a building physics and engineering led focus on the topic. Less involvement by Architecture and the Social Science based disciplines may be one reason why the social benefits and opportunities of retrofitting are less understood. Large scale retrofit can – if done well - create a sense of place in neighbourhoods; contributing to people's overall wellbeing[1]. Retrofitting can also build community resilience, offering an alternative solution to regeneration policies[2].

This presentation will explore these issues using the case study of Poplar Harca – a regeneration housing association based in East London. In spring this year they undertook an ECO funded retrofit program on 1300 hard to treat properties. Findings from in depth interviews with residents and an overall study of the area will seek to address these issues and may provide useful insights for practitioners on how to steer the future agenda for retrofitting.

Notes:

[1] The Institute for Sustainability's Total Community Retrofit approach and Temescal Creek Cohousing in California are good examples of this.

[2] These issues are currently being tackled by organisations such as Just Space and the London Tenants Federation.

Dr Martin Field, Collaborative Centre for the Built Environment, University of Northampton

The market impact of architectural design solutions for housing retrofit in the UK

BIO

Senior Researcher; 20 years in public sector housing and planning, particularly in housing policy and development, investment and retrofit works; keen interest in sustainability issues and in role of community-led initiatives to challenge prevailing market dynamics.

ABSTRACT

What role might aesthetic design choices prove to have in the development of the UK's housing retrofit market? To date the design approach that has been predominant in the selection of retrofit solutions has focused upon technical and technological innovations, and the key market and industry development to date has accordingly been in the areas of technological supplies and technical expertise. While the settings of existing housing have clearly impacted upon their original design and construction, and will have a bearing upon what might be changed in their appearance and style, there has been less overt debate about the aesthetic possibilities that could or should be addressed in retrofit programmes.

The recent final report of the TSB's 'Retrofit for the Future' project identified 'planning issues' as a minor constraint for some of the funded projects, however it is noticeable that wider 'design' issues are largely absent from the reported or recorded data. Given that the majority of UK properties requiring retrofit improvement and efficiency works are properties in private ownership, where there is routinely a value premium associated with dwellings in regard to their style, appearance and location, the lack of debate regarding the potential impacts of 'retrofit design' might relate to a lesser engagement in the wider retrofit market with private sector interests than with those of the public and housing association sectors.

This paper will examine which aesthetic design and planning issues have a current relevance to UK housing retrofit works. It will consider which design approaches might offer the opportunity to maximise the quality of any positive change to local aesthetics, and raises questions about whether there are certain kinds of housing 'setting' that offer particular straightforward prospects of generating long-term retrofit market opportunities to arrange future change. It will lastly look at the impact of potential design change to the likely cost-effectiveness or such works, and to their relevance to future property valuations, and consider if there is much evidence that good 'design' can help to increase an appetite to commission housing retrofit by UK households.

Nick Newman, ECD Architects Head of Sustainability

High Rise, Deep Retrofit

BIO

Nick Newman is the Head of Sustainability at ECD Architects, where he is involved with Post-occupancy evaluation, internal training, design audits and research alongside design work on low energy refurbishment. Nick is a Certified Passivhaus Designer and has recently been included in Building Magazine's list of Rising Sustainability Stars, 2014.

ABSTRACT

The post-war 'big push' for new social housing in the UK, created targets for local authorities to deliver unprecedented numbers of units. During the 1960's over 50% of all dwellings built in Greater London and 75% in Glasgow were in high-rise blocks.

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The disastrous collapse at Ronan Point in 1968 was emblematic of a wider shift in opinion about the aptness of these estates to meet UK housing needs. But of the 227,000 dwellings that survive today, what approaches are necessary to satisfy resident's needs for improved quality of life, whilst meeting wider targets for national 2050 targets for C02 reduction? Is demolition the most sustainable or cost effective approach?

This paper will study a series of six high-rise retrofit example projects by ECD Architects, examining the steps that were taken to transform the prospects of each estate, including structural investigation and repairs, external wall insulation, security improvements, and the creation of semi public/private spaces.

With a focus on the most recent of these projects, Wilmcote House (111 units to Enerphit standard) it will be demonstrated that in whole-life cost terms, an Enerphit retrofit approach is likely to be cheaper over a 15-30 year period than a Building regulations retrofit, or demolition and rebuild. Other co-benefits will also be discussed.