

Living sustainably – which way should we go?

*A University of Hertfordshire-Lafarge Tarmac
Sustainable Living Partnership event*

Conference Proceedings

9.30-4.45pm - October 10th 2013
The Fielder Centre, Hatfield, AL10 9TP

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1. Background to the conference

1.1. The University of Hertfordshire Lafarge Tarmac Sustainable Living Partnership

The Centre for Sustainable Communities is running a Partnership focused on 'sustainable living' that is funded by Lafarge Tarmac at the level of £50,000 p.a. and is at the 18 months point of an initial three-year partnership period. A steering group comprising senior Lafarge Tarmac and University of Hertfordshire staff, as well as invited representatives from development, planning and design, building and housing industries directs the Sustainable Living Partnership. The Partnership is managed day to day by Dr Susan Parham at the University's Centre for Sustainable Communities.

Along with smaller scale activities including production of 'think pieces' which are available on the CSC's website, the main research activity of the Partnership has thus far been carried out by a post doctoral scholar Dr Alasdair Jones who has been undertaking a large research project on attitudes to 'eco-developments'; comparing behaviours toward sustainable living in Australia and the United Kingdom. The Australian fieldwork is completed and written up and the research will shortly move into the United Kingdom based fieldwork phase.

1.2. Conference purpose and format

These Proceedings document the presentations and discussions at the Sustainable Living conference entitled *Living sustainably - which way should we go?* held at the Fielder Centre in Hatfield on October 10th 2013.

The purpose of the one-day conference was to share the Partnership's comparative research findings to date on attitudes to 'sustainable' housing developments, at around mid-way through the current research programme. The sessions offered participants opportunities to discuss and debate these and other issues in sustainable living, and to foreshadow the Partnership's future research directions.

The format was a one-day practitioner friendly conference, to which both expert speakers and participants from around the United Kingdom were invited. Through keynotes and other presentations, panels and workshop sessions over the day, participants considered questions about both attitudes and actions in relation to sustainable living - and look at how it will be possible to make places that work better for both people and the planet. Broad questions explored at the conference included:

- How can we create affordable, well-designed and sustainable housing and places?
- How can we build in 'resilience' – including for energy, water, food, waste...?
- How can we make getting around work well?
- How can we ensure development feasibility?
- How can we change behaviour toward sustainable living?

2. Welcome and Introduction to the conference

The one-day conference was introduced by Dr Stephen Boffey, Pro Vice Chancellor, for Regional Affairs at the University of Hertfordshire who asked Prof Quintin McKellar, Vice Chancellor, University of Hertfordshire, to formally welcome participants to the event.

2.1. Opening remarks by Prof Quintin McKellar

Professor McKellar said that the University was deeply committed to sustainability through its own building programmes.

Prof McKellar reflected that while his own office was in a building with one of the worst performances, the university was working hard on the transformation of buildings – from its 1960s building stock through to its state of the art Law Court Building and will exemplify the best approaches in its new student village which will have zero carbon living facilities.

In terms of sustainability the University has placed great emphasis on improving its own performance through waste reduction programme, better transport (including 'Plugged-In Places'), and attention to food security, in which the Vice Chancellor has a special interest, among other initiatives. These are both important and difficult areas.

Prof McKellar noted that the Sustainable Living Partnership is addressing attitudes in both Australia and the United Kingdom and these comparisons in relation to sustainability promise very interesting results – to see what people in two very different environments view as what sustainability is about – disentangling this is important.

Prof McKellar wished all the participants well for a productive day as part of partnership working on important issues which was highly valued by the University.

2.2. Opening remarks by Mr Stuart Wykes

Mr Stuart Wykes, Director of Land and Natural Resources at Lafarge Tarmac then provided an introduction to the day from the Sustainable Living Partnership Steering Group. Mr Wykes greeted participants, and thanked Professor McKellar for his welcome and introductory comments. His comments are noted verbatim below:

“It is a pleasure for me to be able to introduce today’s event and to thank those contributors that have kindly donated their time to this interesting subject which is so important to us all. In this room we have planners, policy makers, developers, architects, academics, many of those from the construction supply chain; and of course students – the futureand that is what this is all about.

It is difficult to believe that the Sustainable Living Partnership between Lafarge Tarmac and the University of Hertfordshire’s Centre for Sustainable Communities was launched 3 years ago this month.

I will say a little more about the aims and outcomes of the Partnership to date shortly, but would also like to take this opportunity to update you on some recent changes for our Company since the Partnership was first launched.

In January of this year we received approval from the Competition Commission to complete a 50:50 merger of the UK operations of Lafarge and Anglo American (Tarmac). This approval concluded a 2-year process which saw the launch of Lafarge Tarmac.

As Lafarge Tarmac we are the largest supplier of sustainable construction solutions in the UK. Our business is made up of cement & lime, aggregates, ready mix concrete, asphalt and asphalt surfacing and maintenance services. With over 300 individual operational units we have the ability to supply our entire product range on a national basis.

We are also one of the largest private landowners in the country with a diverse portfolio controlling more than 80,000 acres of land. This includes active quarries, restored sites enhancing biodiversity and providing habitat creation including; woodland, wetland, grassland and agriculture together with a number of exciting development sites for residential, commercial, and leisure after-uses.

The Sustainable Living Partnership originated from a shared desire by Lafarge and the University to face up to the complex and interrelated challenges of creating sustainable communities. It's early and continuing aim is to encourage and lead a debate about sustainable living and contribute to national and international work in this area, hence our presence here today.

This proactive approach to difficult and complex issues is representative of Lafarge Tarmac's approach to business i.e. moving from being the leading supplier of primary construction materials to becoming the essential partner in providing sustainable construction solutions.

The Partnership Steering Group provides plenty of opportunities for Lafarge Tarmac, the University and co-opted members to combine their practical and academic expertise, to inform and influence the sustainable communities agenda in three specific areas:

- Designing sustainable places to live (using joined-up thinking/master planning)
- Moving away from fossil fuel dependence, and
- Supporting sustainable transport choices.

In more detail these areas are of particular importance because;

- 'Joined up' means linking the decisions people make about their lives: accommodation, travel, work, schools, shopping, health... it's not just about houses, factories, roads, hospitals – it's about planning whole ways of living.
- The cost of fuel for heating and transport is rising rapidly. It will affect everything we buy, and will disproportionately affect vulnerable members of communities. Reducing demand for fossil fuels and increasing generation from renewable sources are essential steps in what must be our aim of energy self-sufficiency.
- Time spent in traffic is wasted time – it costs us billions of pounds and it's getting worse. We need alternatives which help give people and business choice. With global business how to live closer to work, to travel less, to choose alternatives to cars, and to work at home are key challenges.

What I think this sets out is that Lafarge Tarmac's focus is more than material supply; we are understanding how our materials influence the built environment of roads, schools,

hospitals and homes and how they can be used to provide solutions. Such development is undertaken at our world-leading dedicated research and development facility in Lyon.

We should all be taking a whole life approach to sustainable construction, not only minimising the embodied impacts of our products through continued improvement of our business operations, but ensuring that they perform to the highest standard during use, with as little intervention as possible, combined with a long life and flexibility for adaptation and re-use.

An example of this is our innovation to develop 8 exemplar sustainable thermal mass homes at Waterford, near Hertford, to assist our customers and the wider community and to act as a 'blue print' for the wider housing market. The homes are made of a high quality specialist concrete, super insulated and heated only by the sun - 365 days a year.

A planning application for this development is due to be submitted shortly which captures our objectives for the site. These include:

- To develop a market for truly sustainable materials – ranging from high density thermal mass concrete to sustainable urban drainage systems for the roads
- To develop an exemplar range of sustainable housing options that could be replicated anywhere in the country
- Developing housing to meet the Government's 2016 target of "zero carbon"
- To contribute towards leaving a manageable built environment legacy for future generations.

In particular, the proposed development aims to offer private homeowners the opportunity for a more affordable, healthier and sustainable lifestyle through:

- Reduced consumption of natural resources, including water
- Naturally ventilated buildings
- Energy running costs near zero
- Home working facilities
- Electric vehicle ready
- Generous amenity spaces
- Increased biodiversity.

As well as offering these benefits to future occupants, the Waterford scheme has been designed to be a truly viable option i.e. in line with current market sales values for homes of a similar size and location and most importantly replicable. This should not be seen as a one off laboratory site.

Over the last 18 months, the Partnership's first Senior Research Fellow, Dr Alasdair Jones, has completed the first stage of the major primary research into attitudes about sustainable living – looking comparatively at experiences of inhabitants in Australia and the UK.

You will hear from Alasdair shortly but can I take this opportunity to thank him very much for his very valuable contribution to the partnership.

A second scholar will complete the next research phase and we expect to publish and widely disseminate the completed research findings in early 2015.

At this mid point the Partnership felt it was important to pause, consider and share with others where we have come from, our findings so far and our plans for the future. Today's conference is an opportunity to share these findings and debate the issues raised in a productive and applied way.

From a Lafarge Tarmac perspective the research work that is being undertaken by the Partnership, including the debate that it encourages at events such as today, is directly informing our approach to how we operate and the products and services that we develop. Lafarge Tarmac's David Rich's presentation later in the programme will focus on these aspects providing an increased understanding of our approach.

What none of us must forget is that it is us and people like us who can really make a difference in shaping the built environment for further generations."

Mr Wykes then handed over to Professor Austin Smyth, chair of Session One.

3. Session One: Living sustainably? Is it possible?

Session one was introduced by session chair, Prof Austin Smyth, Director of the Centre for Sustainable Communities at the University of Hertfordshire. In introducing the session, Professor Smyth asked why change in building performance has come about? Is it because of technology or attitudes or price signals post cheap oil since the 1970s? Or is it a product of environmental legislation and regulation? The cost of energy is at the forefront of peoples' minds and Prof. Smyth felt that this was significant.

Prof Smyth then introduced the keynote speaker in this session, with a presentation being provided by eminent town planner, Mr David Lock, Chairman of David Lock Associates.

3.1. *On Pushing, and Being Pushed: A Critical Perspective on Sustainable Living - Keynote presentation by David Lock*

Mr Lock spoke "*On Pushing, and Being Pushed: A Critical Perspective on Sustainable Living*".

Mr Lock noted that the journey so far had traced a path from the Brundtland Report in 1987, the Rio Earth Summit in 1992, the Convention on Biological Diversity, the Framework Convention on Climate Change, the Principles of Forest Management, the Rio Declaration, work on Air Pollution, Agenda 21, Local Agenda 21, the UK Sustainable Development Strategy of 1994, and finally the UK Sustainable Development Commission which was abolished in March 2011.

Mr Lock noted that the guiding principle of sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development recognises the interdependence of environmental, social and economic systems and promotes equality and justice through people empowerment and a sense of global citizenship. Whilst we cannot be sure what the future may bring, a preferable future is a more sustainable one. Sustainable development definitions, and objectives brought into play concepts and terms like interdependence, quality of life, equity, citizenship, diversity, carrying capacity, future generations, uncertainty, precaution, polluter pays and preferable futures.

Part of this focus on sustainability, was Mr Lock argued, about 'being pushed':

Thus with [*Sustainable Development: The UK Strategy \(1994\)*](#) the UK became one of the first countries to produce a sustainable development strategy in response to the call made at the UN Earth Summit at Rio.

With [*Building a Better Quality of Life - A Strategy for More Sustainable Construction - 1999 \(April 2000\)*](#), a main collection of sustainable construction policy documents was released which recommended key action themes to kick-start the adoption of more sustainable practices within the construction industry.

[*Quality of life counts - indicators for a strategy for sustainable development for the United Kingdom: a baseline assessment \(updated April 2004\)*](#) This document looked in more detail at the indicators which were used to provide a benchmark against which progress on sustainability was measured, related to the 1999 Strategy.

[*Securing the Future - the UK Government Sustainable Development Strategy \(Updated March 2005\)*](#) brought the environment, social progress and the economy alongside each other at the heart of policy making. It had four objectives: social progress which recognises the needs of everyone; effective protection of the environment; prudent use of natural resources; and maintenance of high and stable levels of economic growth and employment.

Situating Hertfordshire in relation to this context, Mr Lock pointed out that in the 'little corridor' of a little county in England more practical attempts had been made in sustainable living than many other locations could claim. Letchworth, for example, was seen as of global importance and Welwyn Garden City was a second attempt by the same group (the Garden Cities Association). In between those towns was Stevenage: one of the first new towns post-war. Although the idea of common ownership had shifted to state ownership there were more real life attempts in Hertfordshire as a "laboratory" of sustainable living than in many other places.

Since 2007 a number of big things have changed. There was a substantial plan to push development to identified growth points which in the region were going to concentrate growth at Hemel and Harlow. Government was going to shape England at the 'macro' level but that bigger picture was abolished and now each local authority has to deal with development pressures and issues separately, which is very difficult. This hasn't happened since the planning system was set up post war. There is now no sub regional or regional plan which has been particularly painful and hard. It is bringing border issues to the fore – development issues at the Hatfield Welwyn border are a problem and an example of what is happening everywhere.

David Lock spoke about the developments of Cranbrook and Brooklands that his firm was involved in which exemplified aspects of sustainability in approaches to planning and shaping the built environment.

Mr Lock then went on to talk about 'pushing' by government through initiatives such as the Eco Towns programme. This was announced June 2007, when bids were invited from anyone for developments of at least 5,000 homes plus all supporting uses, which must be capable of producing homes from 2016. These had also to be additional to any statutory development plans. 57 bids were submitted by the end of October 2007 deadline and a shortlist was chosen in June 2008 which would then need to be processed through the planning system. An additional "[*Eco- Quarters*](#)" announcement was made in November 2007

and a *Planning Policy Statement* in July 2009. However, the programme was abandoned by the Coalition Government in 2010.

Figure 1: Cranbrook



Figure 2: Brooklands



The design and implementation criteria for eco towns included guidance for EcoHomes, the Code for Sustainable Homes, BREEAM, Planning Policy Statements on climate change and energy, and Town and Country Planning Association Worksheets sponsored by the Department for Communities and Local Government and produced with partners such as Environment Agency, Department for Transport, Commission for Architecture and the Built Environment.

Figure 3: Exploring an eco town development



Mr Lock also discussed some masterplanned sustainable urban extensions designed by his firm that expressed some of the principles applying to eco towns, including the 6,500 home Rugby Radio Station, the ex-airfield of Alconbury Weald in Huntingdonshire with 6,000 homes and 9,000 jobs proposed, and closer to home Birchall Garden Suburb designed for the edge of Welwyn Garden City in a former tip area.

Figure 4: Rugby Radio Station



Mr Lock noted that ‘pushing’ could also reflect individual desire to do something for the environment. We want to do our bit for sustainable development. Using the car less for unnecessary journeys, walking, cycling, using public transport, being more energy conscious and recycling waste can all help make the environment a cleaner place. Being fit and healthy, through a good diet and adequate exercise, is also beneficial to our society and our economy. So dealing with cars, getting good public transport, cycling and walking

infrastructure, energy efficiency, water, waste recycling, changes to consumption, diet, exercise, and education all had a part to play.

Finally Mr Lock noted that we can build to sustainable standards but asked if this is also what people want – the way they want to live? Is sustainable living just a luxury for times of plenty? Is it something that is done to us or by us? Is it sustainable to feel guilty as a way of life? At the same time, Mr Lock argued that it should be remembered that the eco town ‘box’ opened up opportunities for creative, liberating, empowering, enriching proposals from the bottom up – ideas which hadn’t felt they had anywhere to go previously. So sustainable living doesn’t have to be a negative, constricting or self-abnegating thing.

3.2. Moderated Q and A session

Following Mr Lock’s presentation Professor Smyth moderated a Q and A session with participants in which there were a range of questions and comments.

What’s the definition of sustainable – should it be a completely self-sustaining community? How can you create a Letchworth in current circumstances? – it’s all about people, where they live; how they live.

How far does the idea of nudge (pushing) go? The ‘nudge’ people would say that this is done through us by signals in the built environment and architecture.

On the question of what is sustainable, we are here because we agree with this but cost needs to be talked about. We are lucky we have the University of Hertfordshire and the BRE around here, but costs to residents are a significant issue. To residents – every one of us - would see this as ‘done to us’. This needs to be taken into account.

David Lock responded by saying that the legacy of the two garden cities showed the hard work done by private finance. It is not just about energy or carbon footprint. The garden city narrative is also about social and economic development as part of sustainability. Communal ownership and a fuller, co-operative life was very important. The system finds it easier to deal with things it can quantify rather than ‘squidgy’ intangible things which in the end are more important.

Copenhagen is an example of quietly removing car parking spaces and shifting road space to become a bike friendly city over 10 years – but there was no ‘big’ decision to do so. People are ready to change but are ‘tramlined’ by existing arrangements. The frustration is that people don’t feel they have a choice.

The supply chain of houses and places is such a standard model whereas in the garden cities they had service lots. People chose, say, a Voysey house or did it themselves. We need to widen the variety of choice of delivery of place making systems. The costs of higher standards of house building should be taken from land value given to farmers selling land. A certain points in peoples’ lives they are willing to contemplate a 25-year commitment. In transient communities there is less willingness to make a capital investment.

Further comments:

The top selling car in Norway is now an electric vehicle which has been allowed by taxation changes.

As a former engineer the Cube project I have been working on is about producing zero carbon homes. If done properly no-one would know that. This is done by organising the 'choice architecture' to push people towards more low energy solutions. Therefore the idea of it being expensive to have sustainability is a mirage. We need to look at costs in this pay-back way. The Oyster Card is a good example of making it much cheaper to do the right thing. In this context the push-pull balance may be wrong so we may need to legislate people towards certain outcomes. We should do something similar in placemaking.

On the cost issue, Lafarge Tarmac is on a journey in relation to materials. Having gone to BRE five years ago, they were looking for an architect who could use their materials. House builders are so heavily regulated they don't really have any choice in what they build so people have no choice in what they buy. Their architect has built something so basic with no pumps, gaskets, etc...heated by the sun, ventilated by fresh air. In Long Sutton this moved residents out of fuel poverty. Residents want to feel they are going into a normal house. This is a fundamental principle.

David Lock responded that this was a very interesting point – ie 'the new normal'. At Milton Keynes the Development Corporation did a project called Energy World of prototype houses in the early 1980s. They found that the houses that were most energy efficient looked most 'normal' but that didn't suit some buyers who wanted their houses to 'look' like an 'energy efficient' house as a kind of badge of honour. People like to exhibit to their neighbours that they are living sustainably.

It is a pity that the eco towns programme didn't continue. If being unsustainable is making us feel guilty then we need to do something to remove the guilt by increasing our sustainability. Sustainable living is not a luxury – if we don't become sustainable there won't be times of plenty in future. There are two aspects. The first is spatial planning. Sustainable communities need employment and recreation to help make the right choices and Local authority boundary issues are a problem in this regard. The second is houses built here are smaller than anywhere else in Europe. Why are we cramming people in if we are concerned with quality?

For Ebenezer Howard the social justice element to produce cohesive communities was critical. We don't want an American style enclave or gated communities. We need to choose the best technology so we don't need a PhD in electronic engineering to operate our house.

David Lock commented that houses have got smaller for two reasons: the town crammers and squasher-uppers reflecting a cultural thread in the upper classes to leave fields empty for wheat barons; and from greed. If we had a programme in Hertfordshire of 60 new villages with biggish plots this would be better than the current situation of either dense and horrible or open and empty. But we are currently stuck and can't discuss options sensibly.

On green living, David Lock noted that he feels delighted when his rain gauge shows his rainwater capture has increased.

4. Session Two: Living sustainably – how do we get there?

After a morning tea break we reconvened for Session Two, entitled *Living sustainably – how do we get there?* which was chaired by Dr Susan Parham, Head of Urbanism at the University's Centre for Sustainable Communities. Dr Parham introduced the keynote

presentation by Dr Alasdair Jones, of the LSE, who was the first Sustainable Living Scholar and now acts as a Visiting Research Associate for the Partnership. Alasdair Jones addressed the topic: *Behaving sustainably – exploring the UH Lafarge Sustainable Living research results so far*.

4.1. *Behaving sustainably – exploring the UH Lafarge Sustainable Living research results so far* - Keynote presentation by Dr Alasdair Jones

Dr Jones explained it planned to offer some details of the Sustainable Living Study in relation to its aims, theoretical basis, methods, case studies, preliminary findings and ways forward. It was he said a partnership between the Centre for Sustainable Communities (CSC) and Lafarge Tarmac. The partnership focuses on 3 core areas:

- Moving away from fossil-fuel dependence;
- Creating alternative transport choices; and
- Designing sustainable places to live.

The core component of SLP is the ‘sustainable living study’ which the scholar was asked to design and deliver over 3 years. This is being overseen by a high level ‘steering group’.

The aims of the study concern the fit between designs and social practices from the perspective of ‘sustainability’. A key question is *Do people use ‘ecologically sustainable design’ (ESD) features built into their homes and wider neighbourhoods in the ways that those features are intended to be used?* It is intended to use the analysis gained from exploring this question to inform the delivery, marketing and management of residential and mixed-use developments.

In terms of theory Dr Jones explained that a recurrent theme in his research is the externalities of design and the (dis)connects between design and practice. He noted the view of (Neuman, 2005: 23) that

form, in and of itself, is not measureable in terms of sustainability. Asking whether a compact city, or any other form of the city, is sustainable is like asking whether the body is sustainable. The proper question is not if the body is sustainable, but rather does the being that inhabits the body live sustainably?

From this he argued, the built environment cannot be inherently sustainable – its sustainability emanates from how that material environment is used. It follows that we therefore need to investigate everyday ‘social practices’, as well as assess design, to measure the ‘sustainability’ of the built environment. The research also draws on an established *“tradition in environmental social science [that] relates to research on the role of the environment in framing everyday social practices”* (Barr and Prillwitz 2013: 33).

In relation to methods, Dr Jones noted that much ‘household sustainability’ research has been quantitative (survey-based) to date (see Barr and Prillwitz, 2013). Thus,

“[m]ore work needs to be done to see how sustainable practices are enacted in modern eco-homes. Here, cultural approaches help immensely, through ethnographic work, diaries and in-depth interviews” (Lane and Gorman-Murray, 2011: 10).

Dr Jones explained there was a comparative study design – with fieldwork in both the UK and Australia – which complements a ‘material culture’ theoretical approach. The focus is on two master-planned residential developments in each country; one in an inner city setting and one in a suburban setting. This is a qualitative rather than a quantitative study so methods are qualitatively based and comprise:

- Interviews;
- Focus groups; and
- Site observations.

The research participants have been recruited according to a ‘purposive sampling’ strategy and data thematically coded and analysed.

A case study based approach was employed. This initially sought so-called ‘eco-developments’ but background interviews in Sydney (with academics, urban designers, developers and planners) revealed that “the reality is that there is not much out there that fits your criteria”. The focus therefore shifted to a selection of master-planned developments that comprise design and planning features marketed along lines of ‘sustainability’. Potential case studies were identified through literature review and discussions with a range of stakeholders. The case study site selection was cleared with the Sustainable Living Partnership steering group.

In the next part of his presentation Dr Jones explored in detail the case study locations and the findings and analysis for each.

The first Sydney case study was in the suburban location of Park Central, developed by Landcom (an arms length government development organisation), in the Campbelltown area of outer south-west Sydney. It was configured of 37 hectares with 723 dwellings, and some mixed-use. The development pre-dated ‘BASIX’ (New South Wales’s ‘Building Sustainability Index’, www.basix.nsw.gov.au) but showcases Landcom’s triple bottom line (TBL) initiatives of environmental, social and economic performance. Its ESD features include:

- Fully constructed wetlands
- Reduced potable water demand through building controls stipulating rainwater tanks, AAA fittings and, dual flush toilets
- Reduced energy demand from solar design principles, mandatory gas boosted solar HWU’s and mandated energy efficient appliances
- Provision of targeted housing types such as apartments and retirement units to fill market gaps identified in the local market and retain local residents as their housing needs change
- Provision of clothes drying areas and clothes lines
- Provision of Energy efficient appliances with minimum energy consumption ratings
- Designs oriented towards walkability within the context of the ‘car dependent’ south western Sydney region.

Dr Jones felt it was worth reflecting on Park Central in relation to the traditional but increasingly hard to secure ‘Australian Dream’ of home ownership on a quarter acre block. Park Central was described by Landcom as “a ground breaking development concept for South Western Sydney” and showcased by them as a “model of sustainable development in Sydney’s south-west.” It is the first master-planned mixed use and medium density development in the 3,067km Macarthur Region and is seen as a demonstration project for

the future South West Growth Centres in the greater Sydney metropolitan area. The development contains the first studio units, the first apartments for 40 years and the first office development for over 20 years in the area.

Specifically, the development comprises:

- 186 apartments (1- to 3-bed)
- 50 Terraces (200m² to 300m², some with 'granny flat' studios and others designed with a live/work office component at the front ground floor)
- 177 small lot homes (250m² to 450m² detached houses, some with 'granny flats')
- A retirement village comprising 310 self-contained retirement apartments complemented by a community centre and assisted care facilities.

Figure 5 - Park Central Masterplan



The second Sydney based case study meanwhile focused on the inner city site of Jackson's Landing, developed by the private development firm Lend Lease, at Pyrmont, a peninsula of land jutting into Sydney Harbour very close to Circular Quay. Jackson's Landing is configured of 1,339 residential units, 3.2 ha of public space, mixed-use over 11 hectares. Liveability is emphasised, with the development marketed as "[a] place where you will make friends and know your neighbours" (Lend Lease, n.d.: 2)

Lend Lease's CEO describes Jacksons Landing as a wonderful example of a thriving community that has been created from a previously underused part of the city. It demonstrates how important it is to create a place that is culturally sensitive and environmentally sustainable for future generations (Lend Lease 2012: 14).

Its ESD features include:

- Communal recycling areas
- Community garden
- Solar orientation design principles
- Strong emphasis on provision of walking routes
- Community hall
- Community Title in operation

Dr Jones posed the question whether Jackson's Landing could be described as a density revolution in Sydney development practice. Located in Pyrmont, the most densely-populated borough in Australia (13,850 residents per km²), the development includes the 'Antias' building which is the first apartment building in Sydney to be awarded a 4 Star Green Star - Multi Unit Residential Design v1 certified rating.

Dr Jones then went on to describe details of the Sydney case studies' fieldwork process; noting that the Australian component of fieldwork is complete, with the majority of the data collected between February and June 2013. 57 residents took part in in-depth interviews (one-to-one or paired) and focus groups across the two sites, comprising 51% men and 49% women; with 38.6 % born overseas; and including a spectrum of ages.

Figure 6 - Jackson's Landing Masterplan



In Park Central Dr Jones conducted 13 one-to-one interviews, 5 paired interviews, 1 focus group of 8 residents, while observations conducted over multiple site visits. In Jackson's Landing Dr Jones completed 15 one-to-one interviews, 3 paired interviews, 1 focus group (6 residents and again observations conducted over multiple site visits.

Dr Jones identified a number of UK-Australian contrasts. One of the key areas was the broad variations in sustainability priorities for the built environment between the two places. In the UK, the focus tends to be squarely on CO2 emissions e.g. 'Green Deal' to upgrade energy efficiency, while water conservation is a more dominant trope in the Australian context. Social sustainability a secondary theme in both contexts.

Dr Jones spent some time explaining his preliminary findings under a number of thematic areas.

Finding One – Costing sustainability

The first of these related to increasing energy costs leading to more sustainability-mindedness among residents. In terms of the data collected, decisions to live more sustainably through actions such as to reduce energy consumption, change light bulbs, and reduce car use were almost invariably driven by cost considerations. This was at the scale of 'Strata committees' (resident committees responsible for individual apartment blocks) and individuals. It was worth noting that from a relatively low starting point, energy costs have risen significantly in Australia (e.g. electricity costs have increased by about a third on average in past 3 years). A typical interchange with interviewees was presented to demonstrate these kinds of considerations (see box below).

Costing sustainability:

Interviewee: We separate everything from the garbage. We do everything we're supposed to do. ...Do stuff that will save money.

Interviewer: Money is the driver and the environment stuff comes second?

Interviewee: Yes

Interviewee: The trick about selling sustainability is to tell people it will save them money, [...to be] very focused on the payback, how much it costs upfront and what the payback period is.

Finding Two: Tensions between security and sustainability as design priorities

Dr Jones noted that there is a need to remember that sustainability is competing with many other priorities for developers and homebuyers alike. One, if not the, main priority is security, and securing master-planned communities appeared to conflict with promoting sustainability in some instances. Dr Jones used the example of security versus sustainability in relation to lifts in apartment blocks as at Jackson's Landing. Jackson's Landing apartments with lifts only allowed residents access to their own floor, thus to visit neighbours on other floor apartment dwellers had to take the extremely energy hungry lift to the ground floor then buzz up. The stairs were alarmed and kept sealed in case of fire.

Security vs. sustainability – lifts – an interviewee's perspective

Not only for this development but just generally, people seem to think security is a very important issue these days. I was going to say maybe older people, but I don't know if that's necessarily true because I have a number of friends, and again I don't want to stereotype, but it mainly seems to be the female friends that are more concerned about security, and I can understand that. So for those [security] reasons... a simple example is my neighbour upstairs, who I met through a friend, I'm in [apartment 71], she's in [apartment 81], so if I want to borrow an onion from her or something, I have to go down to the ground floor, go outside the building, buzz her, and then she gets to buzz me up. There's no access between

the floors at all because there's an alarm on the stairwell, and if you go in there, the alarm goes off, and it's also pressurised for fire and safety reasons.... I have to use the lift to go right down to the ground floor, I'm on level 7 so just imagine if you're on level 18 and knew somebody in 17 you'd have to travel 35 floors to get one floor down, which is crazy. (Interviewee)

This was not insignificant given that the energy consumption of lifts typically represents 3-8% of the total energy consumption of buildings. In Regatta Wharf (part of Jackson's Landing) common area electricity produced 1,223 GHG tCO₂ per year (versus 760 GHG tCO₂ per year produced by 143 apartments [Net Balance, 2013: 4]). A national 'Smart Blocks' initiative has recently been launched in Australia precisely to help "you save energy in your apartment block's common areas" (<http://smartblocks.com.au/>) but Dr Jones overall finding in this area is that security fears embedded in design approaches are preventing more sustainable (and healthy) behaviours.

Dr Jones noted that a similar issue arises in relation to security versus sustainability in regard to walkability. Park Central, for example, has been designed in such a way as to feel 'private' (interviewee) and secluded. As one Interviewee noted: *[I]f someone who's not familiar with the area is dropping me off at home, you do notice it's not well signposted, so you can get confused.*

Finding Three: Barriers to walkability

Walkability also emerged as an issue in relation to design at ground level in master-planned areas. For instance, Park Central is extremely close to shopping, public transport and entertainment facilities, and marketed as such, but accessing these on foot not easy. The development has six-lane main roads to contend with on all sides, and very short crossing phases for pedestrians. Some residents, especially elderly (and nearly half of residents are in a retirement village) are thus dissuaded from walking by poor design cues.

From Park Central residents need to cross six-carriageway main roads to get to the two nearest shopping centres. There are short pedestrian phases and interviewees (especially elderly interviewees) reporting that they did not feel confident accessing local facilities on foot, opting to drive instead. Park Central focus group respondents reported that they 'mostly drive' to do their shopping at Macarthur Square (800m from home) and Marketfair (500m from home). One participant said of these roads, "you can't cross in one go," before adding that she "wouldn't like to stop there" (on the central reservation) despite there being a button available to pedestrians to request a pedestrian phase if they only make it halfway across. A view was shared that the pedestrian phase was not sufficient to cross these roads, and this was so "[e]specially for some of our residents with walkers and that, because if you walk with them, it is very slow."

This needs to be understood in context of the dominance of the car in Australia (68.1% of Sydney trips), and in particular in outer suburban areas as exemplified in interviewee comments in the table below:

Interviewee comments:

"I would say, a lot of people if they wanted to go into Campbelltown would just drive. That seems to be a culture here. I've lived in this area – not this particular area but this greater area for pretty much my whole life and that's the culture, like drive to your local shop."

There's one crossing on Hyde Parade which I fought for, for three years. I'm a stirrer. ... A pedestrian crossing. ...[P]eople were going across to the...newsagent and all the doctors.... Every Sunday morning, the people come down to get their Sunday papers and there was no pedestrian crossing. ...[I]t took three years after we moved in of writing letters, talking to Alderman, making friends of one particular Alderman who was on the Traffic Committee and really a long time.

And a phone call to a reporter, and for their photographer, organising a group of people from the hospital, walking frames, sticks, walking across there, about 20 of them.

A Councillor came to look at it one day to see how bad it was and that was an engineer from the Council, and I arranged for it to be very busy that day. But eventually it went in and it's been used every day. People want a zebra crossing here but it's too narrow.

Finding Four: Sustainability designs aren't necessarily practiced

Dr Jones reported that the most striking finding in the Antias building in Jackson's Landing, related to a 'Switch Automation Energy Monitoring System' which had been installed in each house and apartment. This came with an 8-page 'energy usage operation manual' which offers instructions about how to use the complex monitoring system. As the interview reported below demonstrates this has not been straightforward to use and none of the 6 residents Dr Jones interviewed was using it:

Interviewee comments:

I1: It measures energy use daily, hourly, instantaneous, weekly, monthly, yearly usage of all and graphs it out. "It's a pretty smart unit and this is the most basic of this model that we have got. ..."

AJ: Do you use it?

I1: No

I2: I can work the five-day weather forecast. I use it for the weather forecast and assess whether I should book tennis at the planned community tennis courts!

I3: Never. It's a bit of a gimmick if I'm totally honest.

Dr Jones explained that this gap between equipment offered and use in practice applied to other aspects of design too as shown in the following comments:

Interviewee comments:

I: Apparently I have a water tank, but I've never used it because I don't even know where it is.

AJ: Who told you had a water tank?

I: The real estate girl told me I had one, then I spoke to the builder who wasn't sure, then I spoke to someone else and they said no, and then one of the strata people said yes I do. Well, how do I use it? They weren't sure. Apparently it just gets put in with the rest of the water. I don't know.

I: We had solar but it broke. The landlord didn't fix it so now we're on the gas tank

Unfortunately, most of this precinct has been designed so that you wash your clothes and then put them in a dryer; in fact it's a body corporate edict that you can't hang out washing on the balcony. I'm fortunate that I've got a cement section on my balcony and I hang it behind that. (Interviewee, Jackson's Landing)

What can we do with these findings?

In conclusion Dr Jones addressed the question of what can be done with these findings; both in relation to the comparative research yet to be done, and more broadly in influencing practice on sustainable living. Dr Jones suggested a number of ways forward in sustainable living practice. He noted that:

“The last decade has seen considerable progress in the development of an expansive technical repertoire with which to [diagnose] currently unsustainable consumption practices....These developments, however, have not been matched by commensurate progress devising actual policy initiatives to foster more socially and ecologically benign provisioning practices” (Cohen, 2006: 68)

1. How to communicate sustainable practice?

A notable point from the research is that home ‘manuals’, that is, guides for using homes and household technologies lacked efficacy. These just ‘went on the shelf’ so more active approaches may make more sense. ‘Welcome’ programmes were reported through the fieldwork as an effective way of communicating and instilling more sustainable behaviours as long as these were followed up. The Macarthur Centre for Sustainable Living interviewed as part of the Park Central case study explained that it took work and resources to encourage a shift to more sustainable living practices but investment in that may be more cost-effective than underused technologies.

3. Sustainability in context

At the design stage there needs to be more joined-up thinking about interrelationships between concerns for security (e.g. access) and aesthetics (e.g. drying clothes on balcony) and sustainability. It is worth asking how (un)sustainable practices are structured. Can we think of ways that designs comprise sustainability and security co-benefits, for example? Are there more sustainable design approaches that can be marketed for the security benefits they engender too?

3. What makes a building green in practice?

Dr Jones noted that closing the gap between performance ratings and actual practice was important. Many bought into green buildings for resale value rather than sustainability per se, thus it is important that the features of design that render buildings green (in terms of accreditation) correspond to features of design that foster sustainability in practice. This is exemplified in the following interchange:

Interviewee comments:

I: Antias has got a 3 star [‘Greenstar’] rating, and one of the reasons I bought the apartment here was that I was impressed with that. I was kind of thinking forward, and I think it’s pretty much based on sound research, that buildings that are green rated will have greater value and greater propensity to sell in the future...

AJ: Resale value?

I: The resale value, the propensity of people to at least think that what’s on the wall is an impressive thing. If it garners me an extra \$25,000 for the wizardry, then it’s probably worth every bit of what I can’t understand.

4. Residential longevity and sustainability

Many interviewees understood 'sustainable' as meaning you could live in area for a long time rather than the way we would consider sustainability as per mainstream definitions in the literature. An important point was that retirees were very active members of the communities studied and had the time and skills to push for change to increase sustainability of buildings and especially areas. There are thus indications that designing communities that are desirable and affordable across generations is not only sustainable in terms of residence but also in terms of community engagement in carbon-saving activities.

Implications for UK 'sustainable living study' cases

Finally Dr Jones suggested that these findings and conclusions have implications for the next stage of the Sustainable Living Research in the United Kingdom. He felt that a number of questions should be at the forefront of the next research stage:

- What are the foci of 'sustainable design' in the United Kingdom?
- How do they resemble Australian approaches; how are they different?
- Do principles of sustainable design in the UK fit everyday life and practices?
- If not, what is the theory of behaviour change that accompanies these principles? And how is it being applied?
- How does 'sustainability' feature among concerns of residents of master-planned developments in UK (e.g. versus security, access, privacy etc.)?
- How are we thinking about creating mixed-use places in the UK that accommodate residents and others across the life-course?
- Are we doing enough to create places like this?

The next steps for the project are Dr Jones said for the new Research Fellow to pick up the baton towards end of 2013, to identify comparator developments in the UK, collect UK data and start to co-author findings in 2014.

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4.2. *Discussant response to Dr Jones's presentation from a Personal Construct Psychology Approach*

Following Dr Jones' presentation and in the light of his research findings, a discussant response was sought from Nick Reed, Director of the University's Centre for Personal Construct Psychology. Nick Reed considered *Can we change behaviour toward living sustainably?* focusing on behaviour change implications for planning, design and development practice in moving toward more sustainable living.

What is the Constructivist Approach?

Nick Reed first sought to explain a little about the PCP approach. He noted that it has been said that really we are all constructivists now, because nearly everyone believes that different people see ("construe") the same event (or building or person or thing) in different ways. To some an extension to a building is a thing of beauty, whilst to others it is a carbuncle.

George Kelly's Personal Construct Psychology ("PCP") is a major constructivist psychology approach. From a PCP perspective, one of the many implications of such an approach is that:

"....all our present perceptions are open to question and reconsideration andeven the most obvious occurrences of everyday life might appear utterly transformed if we were inventive enough to construe them differently." (Kelly, 1966, p.1)

Personal Construct Psychology & Behaviour

How we construe something is intimately associated with how we behave. As Fransella (1972) puts it:

"It cannot be reiterated too often that how we construe an act, person, place or thing determines how we behave in relation to that act, person, place or thing." (p. 69)

So, if someone (or a group of people) are to change their behaviour towards a certain thing (e.g. towards a building, or a public place, or to public transport), then they must first change how they construe that thing. Personal Construct Psychology has many techniques to find out how people are construing particular situations, things, people and places.

Personal Construct Psychology and "Resistance to Change"

The opposite in meaning to change is usually construed negatively - people often talk in terms of someone being "resistant to change" as if somehow, by definition, if someone refuses to change they are in the wrong. However, if we look at things from a PCP perspective then:

".... perhaps we can give up talking about 'resistance' in the [person] with its negative overtones and exchange it for 'persistence'. Now we ask the question 'why is this [person] persisting in this way of construing the world?' It seems to me that this encourages one to seek the solution by subsuming the [person's] world view...." (Fransella, 1993 at p. 132)

Once we know how someone is construing a given situation and, therefore, why someone is persisting in behaving as they are, we can try to devise ways to change how they construe things and thereby change their behaviour.

PCP and Sustainable Living Research

So, how might the constructivist psychology approach relate to Alasdair's research? A simple example: In one of the developments in Alasdair's research, a "Switch Automation Energy Monitoring System" was installed in the building - but no one used it. The system came with an 8-page instruction book. For the sake of argument, let us assume that the book was identified as the cause of the non-use of the system. PCP methods could be used to compare and contrast different formats for the instruction book, in the context of making the instructions more easily usable by the homeowner, at the behavioural level.

A PCP technique called "pyramiding" (Landfield, 1971) is particularly useful in this context. By asking a succession of specifically targeted "What" and "How" questions it would be possible to find out exactly how a particular person (or group of people) think a user friendly instruction book should be designed.

4.3. Moderated Q and A

Dr Parham thanked both Dr Alasdair Jones and Nick Reed for their fascinating presentations and then opened up the discussion to questions and comments from participants.

Security in the UK is not a major issue and we can keep things simple. For instance to take the example of the car, over time it has become more efficient – each model is better than the last one – while it is possible to still drive the same kind of car. By analogy we need to keep improving the fabric of places in the way we improve cars.

Letchworth demonstrates that in maturing housing markets we ask more questions. Involving users in design process helps to balance different issues.

Alasdair Jones responded that involving users is key but is not done as much as one would think. The question is what do people prioritise?

Nick Reed offered the example of changing computer software systems such as Windows 8 which people didn't want.

One participant wanted to emphasise the importance of building in community engagement. Another asked how communities engage in a positive way on these issues?

Alasdair Jones noted that there did seem to be some resistance to engaging with communities in development process and Nick Reed noted the importance of using both qualitative and quantitative methods to explore this area.

In the Australian data I noticed a lack of emphasis on public transport and cycling etc compared to Hertfordshire.

Alasdair Jones explained that in the Australian case study areas – especially Park Central – most people still drive. The infrastructure to cycle and walk is there but it is hard to access.

Cycling is more a leisure pursuit than for commuting while buses are used in the central Sydney area as is walking.

UH has some excellent ambassadors who encourage others sustainability behaviour. Pictorial leaflets on recycling work better than text based ones. In terms of community structure, there needs to be a balance between elderly and other residents.

Alasdair Jones said that in relation to the monitoring information from individual dwellings, people didn't know what to do with it and how to respond to the data.

Nick Reed asked who has to change? An example of St Albans to Hatfield road restrictions shows how those in power can be resistant.

Monitoring is OK but it doesn't say how much sustainable infrastructure costs.

Yes, if comparisons are made and information displayed in different ways it can bring change.

Alasdair seems to be saying it is not possible to make sustainable buildings. Adaptability of stock and connectivity we do know work yet the examples Alasdair showed demonstrated such rules are not applied. The fact that those developments occurred without authorities or developers being called to account couldn't happen in Hertfordshire? Look at the inaccessibility of Hatfield for walkers etc.

Alasdair Jones pointed out his data had shown the misapplication of what is 'green'.

The conference broke for lunch, which offered an opportunity for participants to pin up their ideas for further research into sustainable living and case study examples.

5. Session 3: How can we make living sustainably practicable?

This session was chaired by Dr Stephen Boffey, the Pro Vice Chancellor for Regional Affairs at the University of Hertfordshire. Dr Boffey briefly described the session theme and introduced the first speaker, Mr Dominic Scott, Director of Barton Willmore, who provided a keynote presentation on *Achieving sustainable development in practice*.

5.1. *Achieving sustainable development in practice - Keynote Presentation by Mr Dominic Scott, Director of Barton Willmore*

Dominic Scott focused on moving from theory into practice..."It's what the punters want"...and noted the critical importance of involvement and engagement in the development process.

Dominic explored this in the context of his firm's work at Longbridge where he explained that 'the death of Longbridge' was represented for him by seeing all the lunchboxes and papers lying abandoned when on a site visit there after the factory complex had closed. Dominic noted how the factory had been not only a place of employment but also a social centre for its community. Barton Willmore had undertaken a community based design consultation there to work with the community on possible future uses of the site.

Dominic argued that in the process of encouraging behaviour change the carrot was more important than the stick. You cannot manage behavioural change if you have got a big stick in your hand. Dominic asked in relation to behavioural change, what is normality? And argued that we have moved from a linear traditional design process to one where we need to take into account a wider cultural, political and economic view.

Barton Willmore was involved in a 'thought experiment' about every day life which enabled them as designers and place shapers to think about the development at a human scale. The example they documented was of a day in Middle Quinton eco town as experienced by a number of different people to understand the kinds of issues impacting on them in everyday life. This helped them to map what was needed in design and planning terms.

Figure 7 – Example of 'Day in the Life' from Middle Quinton

ACHIEVING SUSTAINABLE DEVELOPMENT IN PRACTICE / 10.10.2013

MIDDLE QUINTON – ECO-TOWN

"A day in the life"

7:00pm



It's 7pm and Darren and his wife Julie have been invited to have dinner with Russ, his new boss and the new Chief Executive at the Ecoscience Centre for Excellence. Darren starts telling Russ about how he ended up at Middle Quinton. Fifteen years ago Darren said his world was shattered when he lost his job. He was a temporary employee in a low skilled job and when his employer lost customers and a credit agreement with a key supplier, Darren's job was the first to go.



After a few months feeling very low Darren managed to regain some confidence and came across a Middle Quinton community initiative aimed at getting people back into employment and learning new skills. Darren decided to take up the opportunity. He has now been working in Middle Quinton for over fifteen years; he started on the construction site collecting materials from the existing warehouses and handstanding and taking it to the recycling centre. From here the waste was sorted and processed and then used for new construction in the town. He worked on each of the different building phases. He went on to gain an NVQ in recycling accredited from the local college. He started to project manage the whole recycling process, and moved from recycling of construction waste to municipal and commercial waste. Darren did very well in recycling, as the recycled materials have soared in value as the demand for raw materials grows globally.



Being a people orientated person, Darren eventually combined his skills and took a job coordinating a NVQ training programme in recycling aimed at residents including school leavers, people who have been out of work, and people that want a career change. This year demand for places on the NVQ is high and they have a new course linked to a global recycling business network.

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Dominic spoke about Middle Quinton as a masterplanning process and place-shaping exercise with sustainability at the centre of their thinking. Dominic argued that sustainability must start with 'community' and in this, in terms of self-reliance, we can learn from the past. Dominic invoked the design qualities of the traditional market town rather than centralization that was disconnected from 'place' so that business and local economy, training and skills can support meaningful employment close to home. The development also offered the opportunity to explore new ways of doing consumption and developing hybrid models including designing in allotments in proximity to particular kinds of housing typologies.

Dominic noted that community building is an evolving organism, which needs a shared vision. They were able to develop a community interest company that reflected 'a

developer commitment' before, during and after construction for ownership and accountability.

An important question is what draws or binds people together? Dominic argues that this is social interaction in relation to both time and location.

At the development of Holland Park near Spalding, for example, they did not want to employ a sustainability director but for everyone to be thinking about sustainable development.

Dominic suggests that this requires positive design concepts and principles. The ten key principles for neighbourhoods are:

- Quality homes
- Integrated food production
- Accessible parking
- Streets designed as place
- Multi-functional green space
- A 'walkable place'
- A neighbourhood centre with a mix of uses
- Community collaboration
- Accessible employment uses
- Transport choice

Figure 8 – Middle Quinton eco town bird's eye view



This was exemplified at a development they master-planned at Holland Park, Spalding:

“Holland Park represents a unique development opportunity for Spalding. We broadly welcome the inventive vision for this site and we applaud the commitment of the developer to create a sustainable community which has the potential to become a successful addition to Spalding. We are particularly impressed by the thoughtful analysis of the site and its landscape setting as well as the spatial strategies which would help to structure the anticipated growth of Spalding” (CABE Review Panel)

Figure 9 – Holland Park, Spalding – bird's eye view



Following Dominic Scott's presentation Dr Boffey called on a series of expert panelists to offer brief inputs into key aspects of making sustainable development practicable as a precursor to the session's Q and A with the wider group of participants.

5.2. Economic issues in adapting to and mitigating the effects of climate change - Dr Julia Ferguson, Visiting Research Fellow, Cranfield School of Management

Dr Ferguson explained that she has a background in psychology of sustainability but is also an environmental economist. She noted that we need to reduce our carbon footprint but the key question is how we go about doing that. How do we build in and reflect adaptation in economic terms? Should this be distributive (ie the polluter pays) or redistributive (we all deal with environmental problems which may be caused by others)? Dr Ferguson argued that there is an increasing need to engage with and involve communities in these outcomes to ensure fairness.

5.3. Delivering Sustainable Development Solutions - Dr David Rich, Sustainable Construction Engineer, Lafarge Tarmac

Dr Rich pointed out that being sustainable doesn't necessarily mean we need radical change. In fact before we look to add to the environment or make any change, radical or not, we should consider 'can we already use what we have in a smarter way?' Are there any uses or benefits in what we have that we have yet to consider? If we did not consider what we already had we may still be using Play Doh to clean our bubble wrap wallpaper, what they were originally designed for...

So the question is can we use what we already have to achieve something more, are there systems and solutions that already exist that we can be 'smarter' about which will actually help us become more sustainable.

David Rich explained that he was going to be biased as he was coming from a construction materials company but asked whether it was possible to use the fabric of the development for more than its original design? Is there more that such a company can get out of the materials that have been used to create the walls and floors? In their case can the concrete used provide more than just structural performance?

Its in response to this challenge of joined up thinking in holistic design at Lafarge Tarmac that they came up with what they believe are sensible, applicable and transferable rules for sustainable construction - a checklist for sustainable construction if you like.

It is not all about how you build it and what you build it with - this is the Lafarge Tarmac approach!!! They need to take a holistic approach to a project, not just considering the thing that they are building but how the environment around it can influence it, the way it is constructed and what its constructed from.

Figure 10 – Proposed development at Waterford



There is a need to consider the building as a system: how the components, elements and materials its been made from can all contribute to being sustainable, thermal mass, insulation levels, and air tightness. These are 5 key criteria that Lafarge Tarmac believe are important:

- Site Selection – consider what is already in place, does it make sense to build here
- Building Shape – what are we going to have where in the building, which way is it going to face?
- Building Systems – This is an approach that the company is most focused on; a holistic view to what you can achieve with the materials which you have already in place within your building? Thermal mass can help achieve thermal comfort. It's something that is inherent in the majority of building but do we consider it and look to take advantage of it?
- Fittings – It's great to create a brilliant building that is sustainable but pointless if you fill it with equipment that does not complement what you are trying to achieve. Equipment needs to be selected to work in conjunction and support the design. There should be ease of use for the user.

These are all good attributes but how do they work together and influence each other? What are the key attributes that need to be considered?

So for Lafarge Tarmac sustainability isn't just about materials, its about the way that you use these materials the systems that they can be used in which create a sustainable solution. It is about considering the bigger picture.

This is about where possible making being sustainable simpler - creating systems that do not require user interaction, systems that can be left to run and operate autonomously....

Where learning is required that learning is simple and straightforward. For instance the UK's first commercial Passivhaus building – Interserve Passive house, using concrete and thermal mass, wasn't working properly due to opening of windows, which then affected the operation and changed its performance. A simple change was to add indicators as to when windows can be opened or not. An holistic view and approach is required.

5.4. Designing and master planning good places to live sustainably - Mr James Hulme, Research Associate, CSC

James described his background as an informed generalist. His experience suggests that wider community views things differently from those involved in the way people at this conference are. We professionals in the field have high ideals about sustainable living but rational, scientific evidence is only part of the story. Do we over romanticize the publics' view? People want car parking outside their houses and in town centres rather than more 'sustainable' approaches. We therefore need regulation and enforcement but won't get that so we need to programme for sustainability in a passive way. We do need the developments of the kind shown today.

The private market cannot do all this alone. Urban extensions alone are not enough – we need village extensions and infill as well. We need more adequate infrastructure planning but we have withdrawn oversight and disabled planning.

5.5. Building in energy resilience to achieve sustainable living - Dr Mike Page, University of Hertfordshire

Mike Page described himself as half engineer and half psychologist – which he felt was a good mix. Sustainability - in the mitigation of climate change sense - is at least as much a psychological issue as a technical problem. We already have the techniques and technical knowledge needed to mitigate but we don't use them.

Mike Page's response to this was to build a zero carbon house – the Cube project – to demonstrate these technologies. The more recent 'QB2' is a second iteration of this demonstration project and has excited a great deal of interest especially among young people who say they'd like to live in such a house.

Dr Page referred to the habits, opportunities and negative environmental thoughts that surround peoples' thinking about sustainability and climate change.

5.6. Moderated Q and A session

Dr Parham then invited participants to ask questions or make comments, and the first question was a rather foreboding one:

Are we all doomed?

James Hulme responded that we have currently thrown all the mechanisms for change on to the market. They can't do it all themselves.

Julia Ferguson agreed and said that the government needs to incentivize some forms of activity and penalize others. To help deal with adaptation and mitigation requirements.

Mike Page pointed out that government timeframes and insurance markets are short term and David Lock posited the question why don't markets respond?

Julia Ferguson noted that we have to be really dissatisfied with the status quo to change plus markets can't deal with this quickly enough or deal with negative externalities well.

James Hulme argued that that's the current status quo but in building area there may be a carbon tax for new buildings which could help offset carbon impact.

Mike Page noted that negative externalities are not built into the fuel prices – it is too high for the poor and too low for the rich. Germany has gigawatts of solar power in the summer.

The implications of Dominic Scott's point was the need for a cross section of community in any new development but how can low earners afford "affordable" housing?

Dominic Scott said that he didn't know the answer to that. But one example is 'extra care' elderly peoples' provision which demonstrates that this can be done.

James Hulme said that there has been a presumption that affordable housing delivered in the market – but the only time we met demand was in robust, expensive council house provision. If we lifted the borrowing cap on council borrowing we could build zero carbon houses for much less than £100,000 but it's the land costs in the south of England that are the real barrier. We have decided that ownership is a social norm but many of the mechanisms only happen if people are in the rental sector.

We are assured that it costs no more to build a sustainable house so should government tell house builders what measures they expect to see in a house. My fear is that we could end up with a two-tier system – with some taken out of fuel poverty in new houses that are well designed but most in older houses that cant be easily retrofitted.

James Hulme noted that the Code for Sustainable Homes is a slightly blunt instrument. Industry would rather take a 'fabric first' approach. We need a vigorous debate on national energy infrastructure. We could re-run today's conference without mentioning new settlements – and just deal with retrofit. That's why we need discussion and debate about that.

In Letchworth there is the issue of maintaining aesthetics but also insulation. Visiting a garden suburb in Budapest they built this with single skin walls which are hard to retrofit, and they are working on exterior insulation molded to look like the existing walls. This is tricky, as you need to do it with fairly draconian instructions.

James Hulme explained that there is lots of research in to good and poor retrofit. We are not suffering from a lack of technical data but costs, planning, building attitudes and structures.

Individuals feel vulnerable in the face of information from vested interests however there are good institutions such as the Energy Saving Trust and DECC.

6. **Session 4: Plenary – Which way is the best way for living sustainably?**

Following afternoon tea, Session Four's plenary was chaired by Prof Austin Smyth, the Director of the Centre for Sustainable Communities. Prof Smyth first introduced Susan Parham's report back to participants.

6.1. *Rapporteur's report back: What have we learned about living sustainably – which way should we go? - Dr Susan Parham*

Dr Parham reflected on how hard it was to sum up such an excellent and stimulating conference. She noted that the issues and possibilities raised are at once simple and complicated – with simple requirements but complicated responses. In thinking about living sustainably she said that participants had heard from a number of great speakers and enjoyed some fantastic commentary from participants who added even more depth and richness to the day.

Participants heard from the University of Hertfordshire's Vice Chancellor and from Mr Stuart Wykes of Lafarge Tarmac about how sustainability informs and drives both organisations approaches to the world. As the Vice Chancellor noted, Macadam was of Scottish descent so already there was a link there between the University's Sustainable Living partners and his own background. More seriously he also noted that he works in arguably the worst performing building on campus but that as a University Hertfordshire is now producing some of the best.

Stuart Wykes then gave an insight into the antecedents of the partnership – and also alerted participants to some of the work being undertaken by Lafarge Tarmac at Waterford to develop houses that are zero carbon and easy or even seamless to manage – using some of the firms building products as a construction basis.

Prof Austin Smyth asked some intriguing questions - why has building performance changed so radically in half a lifetime? Is this down to technology? Price signals? Legislation? Austin then introduced Mr David Lock who offered a critical perspective on living sustainably.

Among a number of thought provoking and amusingly made points, David noted that in a little corridor of a little county in England there had been more practical attempts at living sustainably than perhaps anywhere else in the UK. Letchworth and Welwyn Garden Cities were prime examples. David also pointed out that big things had changed since the 2008 *Hertfordshire Guide to Growth* was published, including a loss of regional and sub-regional strategic planning for development and the dismantling of the apparatus of sustainable development and national government level.

David introduced the “pushed by” and “pushing” dynamic to explore how people interact with sustainability. He looked back at the eco-towns initiative – now defunct – to explore this as an opportunity taken up by all sorts of groups usually squeezed out by mainstream development industry processes and approaches. David Lock wanted participants to conceive of sustainable development as potentially liberating, enriching and empowering rather than guilt inducing. Dr Parham noted that she personally wanted to live in the Rugby

Radio Station development discussed by David as it was the best neighbourhood name she could think of.

A rich set of questions interrogated David's perspectives from all sorts of angles. Dr Alasdair Jones raised the idea of things done 'through' individuals rather than by or to them as exemplified in nudge theory and practice.

David Lock made a plea for everyone to concentrate on the 'squidgy' imponderable things as well as those easier to quantify. He made reference to clever techniques like those employed in Copenhagen for mode shifting from car to bike by quietly removing car parking spaces over time without any big announcements about this. David explained this was about helping people overcome the problem of having their behaviour 'tramlined' by the nature of existing infrastructure.

Dr Mike Page noted how the "choice architecture" can help people shift their behaviour in ways that feel natural rather than painful – the Oyster Card experience showed that in London.

David noted that some people in fact want to demonstrate and exhibit their green credentials in the way their house looks rather than these being indistinguishable from others.

There was also interest and concern for social equity considerations in living sustainably. As David Lock put it, houses have gotten smaller because "the town crammer gang represents a thread in the upper classes to leave fields empty for the wheat barons".

After the break the conference moved on to Dr Alasdair Jones' review of his research on behaviour change in relation to 'eco' developments'. It would not be possible in a summary to do justice to Alasdair's presentation but it was worth noting the intriguing 'lift use' example that Alasdair explored. The issue was that because of the design of the so-called 'eco' buildings access to flats was by lift and a perverse outcome arose in which a large amount of energy use was caused by the interplay between this development shaping and security concerns. Dr Parham reflected on whether this suggested that there should be less development of what have been termed 'vertical cul-de-sacs' and more building which does not require such intensive energy use for access purposes.

Dr Jones offered some very pertinent thoughts on ways forward in relation to techniques that might improve the sustainability of outcomes of urban development and use. He also suggested some implications from these considerations that might inform the next stage of the research.

In responding to Alasdair Jones work, Nick Reed brought insights from Persona; Construct Psychology that really helped get a handle on the psychological elements of living sustainably from both an individual and more structural perspective.

Again these presentations provoked some great questions and comments from participants. For instance there was a plea to both improve building fabric and keep this simple – as complex responses seemed often to be unworkable in practice. There was equally a plea to involve people early in the development process of moving to more sustainable living arrangements. From a number of people there was a request to sort out access and

transport infrastructure that was seen as problematic in allowing people to behave in sustainable ways.

Dr Parham reflected that the afternoon session was probably still pretty fresh in people's minds so given time constraints she would not recycle that in her summary. She did however just want to remind participants of another very insightful comment from Dominic Scott in talking about the need for more carrot than stick. As Dominic noted "you can't manage behaviour change if you have got a big stick in your hand". She also noted that everyone would probably identify with David Lock's satisfaction about his domestic grey-water capture and Dominic's desire to know who took his black recycling bin lid...

Dr Parham noted that between them, Dominic Scott, Dr Julia Ferguson, Dr David Rich, James Hulme and Dr Mike Page had all offered some challenging, provocative insights which made the post-lunch session one in which – as Dr Stephen Boffey put it - you couldn't and wouldn't want to sleep through.

In closing Dr Parham thanked everyone for making the conference a really interesting and engaging day which has offered lots of food for thought for the Sustainable Living partnership's next stage. She wanted to thank everyone – speakers and participants – for all their much appreciated input that has made the conference a terrific addition to the Partnership's work.

6.2. Last thoughts from participants

Professor Smyth then opened up the discussion to elicit last thoughts and questions from participants to the conference speakers. Some questions and comments were grouped given time constraints.

The first question was how to deal in 'living sustainably' terms with personal identity based on consumption? A second question was why set the bar for equity in housing so high – as that model is broken?

David Lock responded that he will take some of these ideas back to his clients – on energy and so on. David said though that he was not comfortable with the idea that we should be like the early Christians or evangelical – what has been reinforced today is that these changes aren't discretionary things but things we have to do. He is optimistic that on many of these aspects people are further ahead of the politicians. But we are all like naughty children in the playground – we keep expecting someone to blow the whistle but that hasn't happened. The whistle keeps going back in the pocket again...He noted that this interest and enthusiasm which you see if you go to Ecobuild or Grand Designs has to get in politicians brains. Currently we are all a bit stuck as we can't find a way forward. We need to tell politicians its OK to go further.

What is the role of education, schools and universities to drive change? Universities need to make their research more accessible.

Mike Page used the example of changes of attitudes to sexual orientation or recycling as examples through education over 10 years. This he said was necessary but it is not sufficient. Changing thoughts and behaviour is not the same. Climate scepticism is down to cognitive dissonance – its easier to change what you think, not what you do... We need to make it attractive, trendy, and cool to be green.

The next questioner commented that the gulf between theory and practice is the gulf between knowing and knowing what to do about it. In consumer culture people become disenchanted. People say let's stimulate self-build but that is only a tiny part of the market.

A participant then said thank you for hosting this event with students present. Letchworth and Welwyn Garden City started with idealism and dodgy finance but the availability of jobs was critical.

Another participant noted that about Welwyn Garden City, Howard put himself into a large amount of debt at the age of 70 something to finance the creation of the town.

6.3. Ideas from participants for future research directions

Participants had had the opportunity to 'post' ideas about possible research projects during the lunch break. These are documented below:

- Sustainable tourism development and hospitality
- Home refurbishment 'club' with talks and visits
- Ethnography of a closing factory in relation to community
- Passion or packages: how to reduce flights
- What mechanisms can we evolve to deal with 80% of existing housing stock?
- Engagement of communities in sustainable development
- How to found a new garden city/town (land value)
- Guilt or hope: exploring the affective dimensions to sustainable living

6.4. Next steps for the partnership research, dissemination and application

In his closing remarks, Prof Smyth noted that David Lock's slides posed interesting questions. He wanted, in fact, to thank all of those speaking and attending for their great input – this is very much appreciated and highly valued.

Prof Smyth then addressed next steps for the Sustainable Living Partnership research. In the short term he said the Partnership wants this valuable event to help influence debate on sustainable living (as set out in the Partnership's purpose). The discussions and presentations from the conference will be written up into a conference publication and that document will be disseminated to all those attending and more broadly to 'stakeholders' in a variety of ways. As soon as possible, for example, Pdf copies of the conference proceedings will be found on both the Centre for Sustainable Communities and Lafarge Tarmac websites.

In the medium term, the very useful discussion today will help shape the second part of our initial three years of research activity. Points made will be taken into consideration in completing the Partnership's major research project on attitudes to sustainable living. Some very interesting ideas for shorter 'think pieces' have emerged too. Near the end of the first three years of Partnership it is planned to reconvene for a larger scale event to make widely known research findings in toto from the initial major research on behavioural attitudes to eco developments. That event will also help further shape the Partnership's longer-term direction for working together on these vital 'living sustainably' issues.

Prof Smyth once again thanked all attending and drew the conference to a close at 4.45pm.