



Cambridge University
Land Society

2021

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Editorial



Werner Baumker

Group Director - Property, Howard Group
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The last 24 months have changed the world as we know it – and this surely cannot be an exaggeration. We see and hear it all around us in conversation. Never have I known such candour and openness in talking about the impact and pace of change, both in the workplace and private spheres of life. Holding South African, German, and UK citizenship, I welcome a pragmatic, sincere and straightforward style, and have seen many benefits in the peeling away of both the corporate veneer and social stratification.

I am sure many would agree that this has become most evident in the questions of purpose in business, the wide-ranging drive towards environmental sustainability and stewardship of resource, greater employer and employee awareness of the importance of health and wellbeing in the workplace, the call

for business to deliver positive socio-economic value in the local community beyond profit, and the changing demographic patterns and working practices. These are but a few themes on the lips of many engaged across our real estate industry.

In equal measure, we have during this time seen a staggering acceleration in the application of technological innovation, the digital transformation of society, and the volume of investment capital flowing into knowledge intensive industries. In the case of the latter, the global drive in drug discovery to combat Covid19 has shone a positive spotlight on the life sciences sector. By way of example, there are several thousand known diseases in the world but approved therapies are only available for approximately 500. Although momentum has been building for many years in life science related real estate, we are seeing notable shift. The industry is being driven forward by global demand for therapeutics to help us live longer and healthier lives and by a focus on personalised medicine, and yet is limited by a lack of supply of laboratory space in core cluster markets.

Against this background, the 2021 edition of the CULS magazine focuses on “the changing face of real estate: Innovation, technology, life sciences”, and takes a closer look at how our industry is positioned, be it in connecting people to solve the world’s greatest medical challenges, creating collaboration space where people want to be, or providing opportunity for positive environmental sustainability and social impact.

Special thanks go to five of our Honorary Vice Presidents for their thoughtful contributions to the magazine, including Liz Peace CBE, Roger Madelin CBE, and Jeremy Newsum, Spencer de Grey CBE RA, and Douglas Blausten. I wish to also highlight the continued generous financial support of Howard Group, Apache Capital, Savills, and Mills & Reeve towards the production of this magazine. Finally, a big thank you on behalf of the wider CULS membership to Ian Marcus (President), Ali Young (Society Secretary) and our CULS Forum leaders for another action-packed year.

If you have any suggestions for future content, wish to be involved with CULS in any way, or keen sponsor CULS, then please visit www.culandsoc.com or contact us on info@culandsoc.com. Enjoy the read!

Magazine Sponsors

Cambridge University Land Society would like to thank the following for their generous sponsorship and support of the 2021 CULS magazine.



If you wish to sponsor CULS in future, do please contact us by email on info@culandsoc.com or contact any of the CULS Committee members.

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In keeping with the drive towards environmental sustainability and responsibility across real estate, we have ensured that the printing process of this edition has a reduced carbon footprint. The Premier Paper Group has partnered with the Woodland Trust to create an initiative called Carbon Capture, and funds raised go to the planting and restoring of Natural Woodland within the UK and thus reducing CO₂. For more information on the initiative please go to www.woodlandtrust.org.uk/partnerships/our-partners/premier-paper/

For more information go to our website www.culandsoc.com or follow us on:    

President's Address at 2021 Annual General Meeting



Ian Marcus OBE
Fitzwilliam 1977

It has been an extraordinary and tumultuous year for us all personally and professionally with much sadness and strive for many. But your society, I am proud to say, has not only weathered the storm but reinvented itself and I believe come through the enormous challenges facing our members, notably the student body, stronger and better positioned to add value in this rapidly changing environment of real assets, when social as well as economic returns and responsibility have become paramount.

CULS has adapted remarkably well to the world of zoom and teams, and we have successfully held a series of well attended and innovative events. In broad terms we have held 14 virtual events including an Asia-Pacific gathering and the ever-popular University challenge competition. Congratulations to the winners who were Murray Edwards, but it may not be a good omen for tonight that my college lost in a sudden death penalty shootout. We also held two very successful virtual career events brilliantly arranged by Louise Sherwin, and APEC forum endeavouring to do whatever we could to support the students in these challenging times.

In addition, The Whitehall Group held a further 11 events, expertly choreographed by Colm Lauder and featuring some exceptional speakers including Lord Adair Turner and Sir Vince Cable; Although we were unable to host our regular lunches, the silver lining was that these talks were very well attended allowing us to reach beyond our traditional membership. I would like to formally acknowledge the huge support provided by Goodbody stockbrokers in hosting these lectures and to Fiona Jones for all her hard work in ensuring the Whitehall Group continued to prosper.

A special mention also to our Honorary vice president, Douglas Blausten, for arranging, co-ordinating, and hosting our ninth annual Whitehall Group lecture given by Professor David Runciman.

We also initiated a series of sustainability lectures in partnership with Savills; this initiative led by Ami Kotecha attracted literally thousands of attendees to discuss topics as diverse as rewilding and carbon capture. Such was the enthusiasm for the topic of ESG in all its forms, we have decided to create a new sustainability forum which I am delighted to confirm that Ami will chair, and Savills have offered to continue their financial support for a further series of lectures.

Recognising the obvious uncertainty the pandemic has created, your board have been very focused on ensuring CULS' financial viability. We have been hugely grateful for the continuing overwhelming support of both our members and sponsors in renewing their financial commitments.

I would like to thank:

Europa Capital, Tishman Speyer and Orchard Street for their support of the website

The Monday Charitable Trust for their donation towards our educational activities

Savills, Apache capital, Howard ventures and Mills & Reeve for their sponsorship of the magazine

British Land, Eastdil Secured, Savills, Knight Frank, Bydall, Capco, Carter Jonas and CLEAB for their underwriting of the careers fair

Carter Jonas, Dorrington, and Great Elms for supporting the Whitehall lecture alongside individual donations from our valued members, Chris Bartram Aubrey Adams, Roger Madelin, and Douglas Blausten.

Finally, Denton's and Bath Publishing for sponsoring the National Planning Update.

Although hugely appreciative for the financial support offered by all those mentioned (and some I have probably rudely forgotten) I wanted to particularly thank Erik Ruane for his excellent stewardship of our finances. I am thrilled to report we remain not just financially viable but well positioned to continue to offer modest support to the Depts of Land Economy and Architecture as well as individual students and hope to be in a position shortly to revisit how we can best allocate surplus monies. In addition, we have continued to support the fellowships of Professor Franz Fuerst and Dr Carolin Schmidt, as well as a series of Tripos prizes.

The annual magazine, 2020 titled: "Real estate in a post Covid world – from resilience to re-imagination", gave a fascinating and insightful perspective, offering very personal stories of the impact of the pandemic. It was magnificently choreographed by Werner Baumker and is a fantastic calling card for the society.

Once again, I am grateful to our honorary secretary, Lauren Fendick, for keeping us on the straight and narrow and ensuring that the rules and regulations that bind our society are enforced, maintained and where appropriate updated. The review of our articles of association which I promised last year has been deferred for obvious reasons until we have total clarity on our financial stability.

With regard to board membership, we have formally said our farewells from the committee to Martha Grekos and James Shepherd, chair of the Rural Forum. I thank them both for their marvellous contributions over many years. I am delighted to welcome Oliver Harwood as the new chair of the Rural Forum and I'm pleased to announce Dan Nicholson's appointment as senior vice president of the board, in anticipation of him succeeding myself as president of your society this time next year.

Yet again, I must emphasise that CULS would not be the success it is, nor be able to function without the unstinting support of our two executives, Ali Young, and Fiona Jones. The way they have embraced the technology and remained resolute and focused in this virtual world is the main reason we have come through the last 12 months so well.

We are very grateful indeed for the strong engagement of Land Economy Department Head, Professor David Howarth, and been delighted to welcome to the board Dr James Campbell, head of the Department of Architecture, strengthening the links with this faculty.

Despite the arrival of "freedom day", I think we are all aware that the pandemic has not gone away, and we will need to continually adapt to this changing environment. However, I am confident that CULS will continue to thrive and its purpose of promoting and supporting the depts of Land Economy and architecture, educating our members and providing a network of contacts has never been more important. Very soon I hope we will be able to revert to live events and do what we do best, which is to enjoy each other's company first-hand.

APEC



Brian Waters
MA DipArch DipTP RIBA MRTPI
ppACA FRSA
Chairman APEC Forum

The Architecture Planning Engineering and Construction (APEC) Forum was set up in 2013 and aims to support both the departments of Land Economy and of Architecture – the latter being particularly keen on help with establishing links with practising architects willing to offer outside teaching.

Having kicked off with an elegant and stimulating presentation by Spencer de Grey – Foster and Partners’ joint Head of Design and CULS Hon Member – for its 2013 inaugural event in the Council Chamber of London City Hall, the APEC Forum has become one of CULS’s most active Forums with a highly regarded programme of in-the-moment bespoke events complementing a now established series of annual staples.

Somewhat disrupted by Covid-19 of course, APEC nevertheless managed to keep the flag flying for 2021 by focusing effort on outings for what are currently our core regular features ... namely the Planning Update hosted by Dentons – which was held on Zoom in December with 170+ delegates registered and three Government representatives in the lineup of impressive contributors – alongside the Architects Careers Day or, rather this year, the Virtual Careers Day.



Martin Thompson



<https://cambridgearcsoc.com>

APEC support for Department of Architecture

Sponsorship of Drawing Boards for first-years

Last year, Dr James Campbell, Head of Department, wrote:
“We look like we could have the largest group of first-years ever for 2021.

“(At the outset) we teach our students to draw by hand; and I want to lend each first-year an A1 desktop drawing board which they can use in their college rooms (something even more urgent as, thanks to COVID, they will not be able to work in the Department.)

“The students would return the Drawing Board at the end of their first year so we just have the cost of buying the Boards to cover in that we can readily afford replacements thereafter. Thus, I am trying to raise £4000 for the initial purchase – with the names of sponsors to go on the back of the Boards.”

CULS immediately contributed over half the £4000 to make the total available as needed.

Sponsorship of annual ARCSOC show

We regularly sponsor the faculty's remarkable end of year show in London and its catalogue. This was not necessary for 2021, the show necessarily due to the pandemic being at the Scroope Terrace home of the Department. However, a tour of the school and a viewing of some of the work is scheduled for before the CULS AGM and annual dinner in September.

Architect Careers Day on 5 May

Despite early doubts about the recruiting market, APEC's James Lai and Brian Waters worked with Dr Campbell to bring about 50 graduating students together with a thirteen leading practices ... namely: **Allies & Morrison; CallisonRTKL; Donald Insall Associates; Foster and Partners; Gotch; Grimshaw; GSS Architecture; Hawkins Brown; MCW architects; NRAP; Pilbrow & Partners; Plan A Consultants; and, Weston Williamson + Partners.**

Zoom Rooms were used with distinct success: James and Brian introducing the practices who each then had about 3 minutes to outline what they could offer joining graduates before retreating to their allocated virtual room allowing the participating students to circulate around the rooms and talk with the presenting practice partners.

The afternoon was closed at the appointed with thanks to all concerned ... albeit – with the rooms ‘remaining live’ – proceedings continued for another 90 minutes into the evening!



2021's sole targeted Event:

Although the usual number of compact, more targeted events was not feasible this year, we at least still managed after an aborted first attempt eventually to roll out *Workplace III* being a further sequel linked with the pair of evening events hosted by Macquarie Bank, the last in 2014, looking at the future of the workplace.

Workplace III was marvelously held at 22 Bishopsgate, hosted by owners AXA, with the established format of a venue tour followed by a debate.

The debate was moderated by Paul Finch OBE, chair of the World Festival of Architecture (Selwyn 1968). The 22 Bishopsgate project director Karen Cook and Amy Holtz, the project architect of PLP, along with developer Sir Stuart Lipton, James Goldsmith of AXA, and Despina Katsikakis of Cushman Wakefield were the speaker-debaters.



Rural Forum Update



Oliver Harwood MA (Cantab) FRICS
Chairman of CULS Rural Forum
Partner, RH & RW Clutton

I write as the incoming Chairman of the Rural Forum, which appointment it is my great honour to have recently been elected.

Clearly the pandemic has dealt a blow to the programme for face to face events over the last 18 months but now everyone over 18 has had the opportunity to be double jabbed and the country is opening up we can look forward to meeting face to face again.

For my own part I hope to be able to organise 3 visits over the next 12 months to places that I hope will be of interest to all involved with rural land. The first (I regret I cannot yet confirm a date) will be to Chevening Estate, managed by my firm (RH & RW Clutton – the modest sized one based in the South East, and the great-great-grandfather of the London and International one).

There are many exciting things going on there, not least the proposal to landscape the park to seek to deflect the noise from the M25.

www.dailymail.co.uk/news/article-9201311/Foreign-Secretarys-country-estate-spends-5m-mounds-block-views-M25-motorway.html

The Local Planning Authority will have determined their views on the proposal by the time you read this, and while we have the support of English Heritage there are many nay-sayers (and this is Sevenoaks whose first answer to most planning enquiries is negative): still we hope for the best.

The Estate extends to 3500 acres, with let farms, a charming Estate village and a biomass district heat scheme, as well as a significant area of woodland and of course the House and Park. If of interest, there is a good precis at www.cheveninghouse.com/history.htm

I would welcome offers from rural members who are willing to offer visits – please contact me direct at: oliverh@rhwclutton.co.uk

The Whitehall Group



Colm Lauder
Goodbody
Whitehall Group Chair



James Lai
CallisonRTKL
Whitehall Group Vice Chairman

The Whitehall Group, a forum of the Cambridge University Land Society, founded in 2014 by Douglas Blausten is a unique high level policy discussion and thought leadership group for alumni of the Department of Land Economy and those who are connected with the University of Cambridge. Amongst our members and supporters are current and former Ministers, Diplomats and senior business executives. The forum allows members and their guests to meet and discuss matters that are outside their business and professional lives. Membership is corporate and allows members to alternate with non-Cambridge colleagues. Members are also encouraged to invite a guest to join them at events when capacity allows.

The Whitehall Group is jointly-Chaired by Colm Lauder and James Lai, who along with the steering committee, organise a wide range of events covering macro-economic business and social issues. Past speakers have included Ambassadors, Ministers, Commissioners, leading academics and journalist. Topics have included Foreign and European policy; Education; Social Mobility; Infrastructure; Health; the Economy; Housing; Climate Change; Drugs; Transport; Conservation and Heritage; Mental Health; Devolution; Science and Technology; the Middle East, Russia and Belarus.

Covid-19 restrictions meant events over the last year moved to an on-line Conversation Series. This series was very well received by our members and guests and attracted a strong calibre of additional attendees. Speakers for this series included **David Smith** – the Sunday Times; **Professor John Kay CBE** – Economist; **Lord Kerslake** – Centre for Public Scrutiny; **Martin Wolf CBE** – Financial Times; **Ian Mulheirn** – Tony Blair Institute for Global Change; **Emily Shuckburgh OBE** – Cambridge Zero; **Dr. Loyd Grossman CBE, FSA** – The Heritage Alliance; **Stewart Lansley** – Economist; **Dr. James Campbell** – Dept. of Land Economy; **Dame Fiona Reynolds** – Emmanuel College; **Rt Hon. Sir Vince Cable**; **Professor Dame Theresa Marteau DBE** – University of Cambridge School of Clinical Medicine; **Dr. Robert Grimes** – award-winning Science writer; **Michael Lavelle** – Edf Sizewell C; **Lord Adair Turner** – Institute for New Economic Thinking; **Franak Viačorka** – leading Belarusian opposition politician and journalist.

The Whitehall Lecture Series

The 9th Whitehall Lecture entitled ‘**Did Covid Kill the Climate? How Democracies Fail in a Time of Crisis**’ was presented on-line by **Professor David Runciman**, Professor of Politics at the University of Cambridge on Thursday, 26th November. **Bronwen Maddox**, Director of Lord Sainsbury’s Institute for Government moderated a distinguished panel discussion following the lecture. To watch a recording of the live lecture and discussion please go to <https://youtu.be/50wuvvkZbCU>.

Panel members included: **Mark Leonard** – Director, European Council on Foreign Relations – Berlin; **Edward Luce** – Financial Times US Editor – New York; **Dr. Marina Povitkina** – Department of Political Science – University of Oslo; **Dr. Ellen Quigley**, Adviser to the Chief Financial Officer and Research Associate in Climate Risk & Sustainable Finance.

The large international representation at this live on-line lecture included people attending from 13 countries and included attendees from 15 universities and a number of journalists. We were very grateful for the generous support received from Dorrington plc as well as from Carter Jonas LLP, Old Park Lane Management Limited, Boclips along with members of the Cambridge University Land Society and the Whitehall Group.

The 10th Whitehall Lecture was held on Wednesday, 27th October, 2021 at 18.00 GMT. Professor Philippe Sands QC, Professor of Laws and Director of the Centre on International Courts and Tribunals, University College London **discussed** ‘Chagos: The Last British Colony in Africa - A Short History of Colonialism, a Modern Crime Against Humanity’. **Gideon Rachman**, Chief Foreign Affairs Commentator, The Financial Times, London moderated a panel discussion. The Lecture and panel discussion was presented in front of a limited audience whilst the live broadcast was watched internationally.

Panel members included: **Dr. Bonny Ibhawoh**, Senator William McMaster Chair in Global Human Rights, McMaster University, Ontario; **Dr. Jeanne Morefield**, Associate Professor of Political Theory, University of Oxford / Fellow, Quincy Institute, Washington D.C.; **Dr Colin Samson**, Professor of Sociology and Director of American Studies, University of Essex.

We are grateful for the generous support received from our Corporate Sponsors Carter Jonas LLP and J Leon along with support received from members of the Cambridge University Land Society and the Whitehall Group. A recording of the lecture and panel discussion is available via the CULS YouTube channel <https://www.youtube.com/watch?v=t2eKawaBlqQ>.

As with the previous lecture this will be live streamed to purchase tickets please visit the CULS website at: <https://www.culandsoc.com/events/10th-whitehall-lecture/>

If you would like further information on the Whitehall Group please contact Fiona Jones, Group Secretary (fionajones.wg@culandsoc.com).



Sports & Leisure Forum



Dominic Reilly

Immediate Past President
Chair of the CULS Sports & Leisure Forum
Gonville & Caius (1975-1978)

The Sports & Leisure Forum organised and hosted three events in the virtual world imposed upon us by the lockdown that was in place for large parts of the last year.

In deepest January we continued our "In Conversation" series with Monty Don, who is a graduate of Magdalene College. In front of an audience of more than a hundred of our members and guests, Monty was interviewed by Tanya Bird a former Trustee of Kew Gardens and Mike Gunton, the creative director of the BBC Natural History Unit. The conversation covered a wide range of topics starting with Monty's reminiscences of his time at Cambridge and then his development and interests in all things horticultural. We appreciated the openness of Monty's replies to the various questions and issues that were discussed, and are extremely grateful to Monty and to the preparation

that Tanya and Mike put into the evening. We have now interviewed Mike Brearley & Sarah Winkless and look forward to organising the next in the series in the near future.

Following deepest January and into deepest February we then hosted a wine tasting. Simon Baile of Excellar (brother to our society secretary Ali Young) entertained a dozen households who had previously received a case of wine and cheese to be consumed while Simon educated us on the subject of the benefits of drinking organic wine. The wines we drank were a Rene Jolly Champagne, a St Hilaire Vermentino (farmed organically and going for certification), a Chateau Coujan Gabrielle (Organic) and a Montmayou Assemblage (grown in Argentina at high altitude). Apart from the wines being absolutely delicious, Simon expounded on the health benefits of drinking organic wine and that none of us were likely to suffer from any form of hangover the next morning, which indeed proved to be the case. Simon I am sure gained some new customers that evening (myself included) and the success of this format I hope will also be repeated in deepest darkest winter 2022.

The success of our first series of University Challenge demanded a repeat. 32 brave CULS members were put to the questioner's sword in three rounds leading to an extraordinarily competitive final between Murray Edwards (captained by Hannah Durden and whose other

team members were Jonathan Chandler, Gareth Roberts and Alex Storey) and last year's champions Fitzwilliam and Corpus (captained by our President, Ian Marcus and whose other team members were Paul Munro-Faure, Emma Fletcher, and Richard Morton). After half an hour of "starters for 10" and specialist questions, the scores were tied at 185 points each. The final went into a penalty shootout with each member of their team, having to answer one question from the question master. Murray Edwards managed to answer three of the four questions with Fitzwilliam/Corpus answering two, so Murray Edwards prevailed by the thinnest of margins. It was great sport and enjoyed by a number of spectators including Dr Derek Nicholls, who while being a fellow of Fitzwilliam College also sided with Murray Edwards as he used to hold the post of Director of Studies for Land Economy at the College. Congratulations to the champions, commiserations to the runners-up, and thanks to all 32 competitors who were brave enough to take part. Maybe if we repeat this event next year we will be able to have a final in front of a real live audience.

The Sports & Leisure Forum will continue to put on events and attempt to reach those parts of the society not normally reached in our other activities, while my thanks go to the committee Huw Stevenson, Hannah Durden, David Mortimer and Gordon Wood for their involvement and help in the events we have put on this year and what we hope to arrange in the coming year.



Silver Street Group



Sophie Jenkinson
Senior Associate, Ashurst LLP - Chair



Tat-Kei Lo
Senior Associate, British Land -
Committee Member

As our members are slowly returning to the office, Silver Street Group hosted our quarterly members drinks on 29th September at the Running Horse pub in the West End. It was great to see members returning, as well as some fresh faces from our recently graduated class of 2020/21.

We look forward to resuming our usual annual programme of SSG Annual Dinner (summer), Christmas reception, wine tasting and quarterly drinks. We welcome new members to join the forum and event suggestions.

The Silver Street Group is a social group for those members of the Cambridge University Land Society (CULS) who have graduated within the past 15 years. We arrange a series of social and networking events, mostly held in London and Cambridge. Members are welcome to make use of our LinkedIn platform to reach out to our alumni network. Link: <https://www.linkedin.com/groups/4663842/>

The Cambridge Land Economy Advisory Board

The Cambridge Land Economy Advisory Board, CLEAB, comprises around 40 practitioners from industry who give part of their time to support the Department of Land Economy. CLEAB works alongside CULS, which is open to any student or graduate of the Department of Land Economy, and also the Department of Architecture, and to any graduate of the university of Cambridge who works in the Property Industry.

CLEAB is a charity whose main purpose is to act as a link between the Department of Land Economy, and the real estate industry, with a view to sustaining and enhancing the outstanding excellence of the Department of Land Economy's world-class research and teaching. CLEAB is able to provide additional financial support to the Department and acts to promote it as appropriate both within the UK and overseas. It also gives business input to the Department, together with suggestions for appropriate research topics for the Department.

Over the past few years CLEAB has provided financial support for the Department, for particular projects or roles and together with CULS, a successful mentoring programme, finding mentors for more than 100 students each year.

CLEAB hosts an annual dinner giving opportunities for students to meet key figures in the industry. It also hosts an annual mentors' drinks party, giving mentors the opportunity

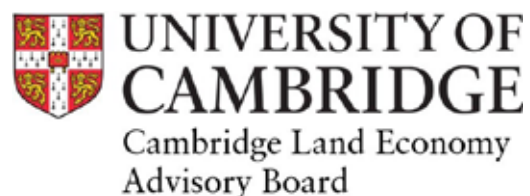
to meet the other mentors. CLEAB has taken students on tours of London, with a series of careers talks and examples of the opportunities open to them, and hosts an annual careers fair (jointly with CULS) attended by around 150 students each year.

CLEAB Chair, Jon Zehner says

"Along with all the other members of the Board I enjoy working with faculty and students to help keep the Department pre-eminent. There's a common interest involved, because the real estate industry continues to grow and to change and needs the finest minds, of all ages, to help it do so. As someone who has worked at a global level for many years, I also particularly support the Department's international outlook, whether in relation to recruitment or ideas"

For further information, contact: ali@cleab.org

www.cleab.org



The Changing Face of Real Estate, Innovation, Technology, R&D and Life Sciences



Roger Madelin CBE

Joint Head of Canada Water at British Land

I am the Joint Head of Canada Water at British Land; before this role I spent 29 years at Argent. As CEO there, I lead the business to be selected and then to deliver the King's Cross development until 'retirement' in 2015. The opportunity to join British Land after Argent, to lead a project envisaging a whole new 53 acre 'urban centre' for London at Canada Water has turned out to be the most exciting opportunity in property I have had....to date!

In 2016 at the top of the agenda for many businesses was health, wellbeing, productivity and sustainability. I felt that Canada Water, surrounded by 120 acres of park, woodland and a recreational dock could excel in all of these areas.

The experience of the pandemic has caused many to question the long term need for 'work' to continue and to expand in what are or look like office buildings in urban centres. I will argue below that there has never been a more important time for urban located work spaces.



The old Daily Mail Printworks building to be converted to innovation space.

Growing up in the 1960's and 70's was an exciting time; Concorde, MRI Scanners, a moon landing and a 100mph lap on a motorbike of the Isle of Man. (Not me!). One of my favourite TV programmes was Tomorrow's World (check it out on the web)

Whilst the pace of technological progress has been huge since then, I often think what real differences in day to day life would my late father really notice if he walked through a city with me today. (He died in 2004)

The roads are still clogged with polluting cars; he would comment that the cars have got noticeably larger and most of the seats in them are still empty. There are a lot more white vans.

Aeroplanes flying overhead still look very similar but as a pilot he might notice that some of them had wings that are thinner and the engine noise is a little quieter. He might ask if they were finally using the same materials as gliders (that we both flew) in the 1970's and 80's! (Glass and carbon fibre)

He would be intrigued by seeing so many people holding small computers (or phones) but would be delighted to note that almost every jazz recording ever made could be called up and listened to on wireless headphones. Speaking to someone in Australia now had no time lag and cost no money.

If he became ill, he would be disappointed that physically seeing a doctor had become much more difficult and if he needed an operation, he would be annoyed as to how long the waiting list was. He would note that becoming older and needing care did not look like a good thing to do.

He would notice that more people had become 'larger' (overweight) especially children.

He would be disappointed that no one had been back to the moon and onto Mars.

If someone had died in 1994 or 1984 or even 1974 and returned today would they actually notice many day to day differences walking around our towns and cities? Has anything really changed that much? Some problems and challenges have actually become worse.

We all know that much below the surface, in offices and in factories has of course changed.

In 2004 an average UK citizen's accumulated life time knowledge could have been sent across the world in a few seconds, today the knowledge of the whole of the UK's population could 'travel' to most of the world's population in a fraction of a second.

The amount of data that we have accumulated and are accumulating about so many aspects of us as humans (social behaviour and biological 'operation'), and of the world around us, is increasing exponentially. This is a massive unseen change. Overlaid with this quantum of data is the ability to process it at every increasing speeds and to spot and predict patterns (Artificial Intelligence). We are experiencing a revolution, which will lead to a 3rd Industrial Revolution?!

Very few aspects of our lives will be unaffected by this revolution and business, social, entertainment, environmental and medical/health opportunities will present themselves at an increasing rate.

So what does this have to do with Real Estate? In one word; application.

Whilst a home (or garage!) working 'geek' might arrive at an idea; people with a huge variety of skills will need to come together to move that idea forward.

In my 35 plus years experience of Real Estate, large multi phase developments such as Thames Valley Park, Green Park in Reading and King's Cross have attracted 'innovation companies' such as, Microsoft, Oracle, Cisco, Google and Facebook. When King's Cross was being planned, Larry Page

and Sergey Brin from Google had only left their garage for 2 years and Facebook did not exist. These 2 business now occupy over 2 million square feet just at King's Cross. Good ideas being applied often need many hands and skills to come together.

The above real estate developments and Canada Water all had/have the key 2 attributes for innovative and optimistic businesses. Accessibility for the talented people and real estate options for them to expand quickly if they need to. (It will not have escaped the readers notice that Google and Facebook are still taking more office space)

I am convinced that data and the ability to analyse it will not only create a huge number of new business ideas but new businesses, some of which will become major users of work space.

There will be few businesses or sectors that will not be affected and hopefully for many it will be a catalyst to be more efficient and to grow at the same time. Some of course may become smaller, cease to exist or be able to work in different ways but the growth of new businesses will keep the demand for the right real estate growing.

In specific areas such as human health and life sciences completely new business areas will form resulting from research and science, but they will be driven forward faster by the analysis of data.

Talented people from all specialisms will need to come together to apply the ideas. Young (and not so young) bright, optimistic people want to go where other young, bright optimistic people are. Mental, physical and social stimulation is a human desire and for most a requirement! This cannot be replicated on Zoom. Symbiosis and serendipity thrive with 'real' interaction. Sir Paul Nurse from the Francis Crick Centre at King's Cross was always very clear in explaining why the building needed to be in Central London. Simply; to attract, to stimulate and to retain the best people.

If London and other attractive areas of the UK genuinely keep open for International talent and International finance and implement sustainable growth policies, businesses will chose to locate and expand there. Home grown talent is of course essential but sustainable growth at a scale that the UK needs (to pay it's bills) will only come from allowing the best from the world to chose to be here.



A modular campus for Tedi London, the Applied Science University as part of the JV between Kings College, UNSW and Arizona State University.

On a more micro scale, exactly where might these businesses chose to locate?

1. Talent. As the most important resource is talent, a large pool of talent and an ease of accessibility for that talent is key. As it happens Canada Water will be (in 5 years, JLL sourced research) the most accessible place in Greater London for under 35 year olds within a 45minute public transport or cycle commute. Over 70% of the employees for many business are under 35 years old.
2. Product. All new buildings will/should be better than any already existing from an environmental aspect but the very best will have a greater appeal as ESG issues become more desirable/necessary/legislated. 'The flight to quality.'
3. Place. Coming into a workplace must offer more than staying at home or in your garage. A green, fresh, healthy environment but with an urban scale and buzz? Great culture/entertainment offers and amazing social spaces; bars, pubs, restaurants will be important. Important too will be the ability to be part of a wider community, to feel connected and valued. Opportunities to be involved with existing or new communities by volunteering or participating in sport or social activities will be valued. The existing British Land Campuses and the new one at Canada Water offer and will offer this.

4. Flexibility/specification/adaptability. The right space, to locate into quickly, to operate in effectively and painlessly with room to expand (or contract) fast and easily. The consequences of innovation and R&D by definition are hard to predict; property needs to respond. Understanding and providing for the physical needs of some life science and innovative technology occupiers is also key.
5. Service. Our occupiers are our customers. Real Estate is not their business, we need to support them.
6. Value. Never to be forgotten!

At Canada Water with 53 acres one might expect that we will deliver an exemplary mixed use environment. We will!

We are also delivering modular space to occupiers' requirements within 9 months of agreeing the specification and size. We can provide more modular space quickly and easily whilst more permanent building options are brought forward. 'Whilst you expand and your business plan becomes clearer, we are building'. We are now expanding our modular offer into 'plug and play' laboratory spaces.

A modular offer cannot of course be provided everywhere by every developer/landlord and but other loose fit, fast, flexible (and sometime taylor made) occupation arrangements will become more in demand.

For the Real Estate Sector to best respond to the growth of businesses grasping the opportunities from innovation, technology, R&D and life science, in my view the fundamentals of a 'Great Place' remain the same but being able to provide the right specification, fast, adaptable, real estate solutions with room to expand/flex will become even more important as the 3rd Industrial Age 'takes off'.



Life Sciences and the Property Investment Opportunity



Douglas Blausten
Hon. Vice-President CULS
Consultant, Carter Jonas LLP



The ongoing seismic shifts in the office and retail sectors mean that the range of commercial property markets where occupier demand is relatively predictable and resilient has narrowed. As a result, investors are increasingly seeking opportunities in sectors previously considered alternative, high risk or specialist.


The global life science industry is very much in the ascendancy, propelled by the pandemic and a range of underlying long-term demand drivers. This sector is increasingly on the radar of property investors, and for many, it is moving from 'opportunistic' to 'core'.

For global property investors, the UK is an obvious choice. A world leader in life sciences, particularly in certain specialisms such as genetics and genomics, it benefits from a highly developed infrastructure and skills base, boasting three of the

top ten global universities in this field. The life sciences are also relatively 'Brexit-proof' and less prone to the impacts of the remote working revolution.

Additionally, the sector has benefitted from a significant increase in private funding, underlining the expectation of strong growth over the next few years. According to data from the UK BioIndustry Association / Clarivate, nearly £1.6 billion was invested in the UK biotech and life sciences sector from March to May 2021, the highest quarterly amount ever recorded, with £2.4 billion invested in the first five months of 2021, compared with £2.8 billion in the whole of 2020.

There is also increased Government support with the Office for Science and Technology Strategy aiming to put science and technology at the centre of Government policy and services, whilst the NHS has committed to utilising the best value new technologies.



Cambridge Science Park – Carter Jonas acquired this office and lab investment for South Cambs DC, before the market became as hot as it is today.

Property market activity and pricing

Some significant property transactions demonstrate the sector's attractiveness. Perhaps most prominent has been the acquisition of Kadans Science Partner by AXA Investment Managers – Real Assets from Oaktree Capital in late 2020 - a portfolio that includes locations in the Netherlands, Germany, and the UK. Other recent deals include Harrison Street Real Estate Capital and London-based Trinity Investment Management signing an agreement to purchase five UK life sciences properties for £250m; and Brookfield Asset Management acquiring a 50% stake in Oxford's Harwell Science & Innovation Campus.

To see how the market has strengthened, we need to look no further than Cambridge. Carter Jonas reports that life sciences space in the city has seen strong growth in rents over the last year. Prime rents for science park accommodation

have increased to £42.50 per sq.ft. compared with £36.00 per sq.ft. a year ago, reflecting the remarkable strength of demand and lack of supply for this type of accommodation.

Likewise, capital values in the city have surged, as shown by the evolution of yields achieved in transactions over the last year. At Cambridge Science Park, in September 2020, Carter Jonas announced the purchase of Unit 296 by South Cambridgeshire District Council - this achieved a net initial yield of 5.95%. Subsequent transactions saw the yield shift down to 4.53% in January 2021 and 4.21% in February. The latest deal at the Park completed in May 2021 at just 3.6%. This is in stark contrast to yields on traditional prime office space which have remained relatively static at circa 4.75%.



Cambridge has a strong track record of start-ups across the broader science and technology sector, with well-known examples including Darktrace, CMR and ARM (now part of Nvidia). William Rooke from the Carter Jonas team behind the 296 deal believes that start-ups will continue to be a significant source of occupier demand. He commented, *“although only a tiny percentage will grow to become large companies, some will succeed to become the employment forces of the future. This type of progression will drive occupational demand in the longer term. Coupled with this, investors are now less concerned about an occupier’s covenant strength and are increasingly looking at their business model and growth strategy.”*

All this bodes well for the future, although there are limitations on the future trajectory for demand and pricing. Whilst Rooke expects the Cambridge market to remain very

strong, many of the sector’s prominent property investors such as Brockton Capital, Oxford Properties and Mission Street have now bought in the city and may consider themselves sufficiently exposed. Mission Street in a JV, have also just made a major acquisition in Oxford.

The opportunity for development

The major challenge for the sector is a lack of supply. Though this is positive for rental value growth, it risks being a significant barrier to investors wanting to enter or expand their presence. Unsurprisingly, given the sector’s current profile and prospects, an increasing number of non-specialists are looking at ways to get a foothold, further boosting investor demand.

Development is an obvious route where no standing stock is available, but life sciences space requires a high degree of specialist knowledge. It is costly to build and requires flexibility to meet the needs of a broad spectrum of occupier type.

Additionally, location is paramount. Agglomeration is seen as essential by many occupiers in the sector, helping them share knowledge and benefit from a labour market with specialist skills and experience. Successful locations are often underpinned by other fundamentals such as a leading university, a teaching hospital, a catapult centre, or a prominent private sector corporate.

Another consideration is good design. Again, flexibility is vital. As businesses move on, there needs to be sufficient adaptability, so space can be re-let to enable new start-ups and SMEs to develop.



Oxford Science Park – A 735,000 sq. ft. science park campus with a cluster of 90 life sciences companies. Carter Jonas has acted since 2015 and successfully let over 130,000 sq. ft. of Grade A office and laboratory accommodation. Currently providing project support on the next phase of speculative development, comprising 160,000 sq. ft. of office and laboratory accommodation.

There is also a need to offer flexibility between lab and more traditional office space. Indeed, the requirement for office space is growing as digital technology allows ‘virtual labs’ to undertake work that might previously have required specialist lab space, and the role of artificial intelligence increases. New stock needs to meet these needs and should also support collaboration between the various occupiers of a multi-let building and other organisations within a wider cluster.

However, inexperience is not necessarily a barrier to development. A joint venture or purchase of an existing player are strategies for consideration. With the growing demand for lab space, there may be opportunities for the private sector to work with universities and hospitals to unlock vacant or under-utilised land for this type of product.

An example of this approach can be seen in Oxford, where Magdalen College is looking to sell a 40% stake in The Oxford Science Park. The college is seeking a ‘strategic partner’ who can deliver a development programme to help the park reach its full potential and capitalise on the strength of demand. The sale price will be keenly watched, and will undoubtedly deliver a very significant value uplift for the college.

Beyond new development, investors are looking at ways of repurposing assets, including the growing surplus of secondary office and retail space in central locations, given the momentum from the life science sector to locate in city centres.

In Cambridge, for example, Legal & General is currently disposing of the Grafton Centre, the city’s second-largest shopping centre. It is noteworthy that the marketing strategy is heavily geared towards its prospects as a mixed-use scheme and the potential to utilise space for life science and broader technology

use. As William Rooke commented, the mere fact that this proposal is being advanced - for a major shopping centre in a thriving city centre - speaks volumes about the market.

Nevertheless, this type of strategy will not be possible for all buildings. The life science sector often requires sufficient floor to ceiling height, floor loadings, or power capabilities. As a broad generalisation, retail space may meet these specifications to a greater degree than offices. However, it is perhaps too easy to see it as a solution to an underperforming asset as, for the myriad of reasons discussed, the market is highly specialised.

Moving forward, the lack of space in strategic locations is a major constraint for the sector in the UK, and the delivery of appropriate accommodation is key to its continued expansion. However, for those with the support and innovative strategies, the opportunities remain immense.

Working space

- a new approach to saving London's industrial land



Liz Peace CBE

Serial Chair and Strategic Adviser to the Property industry
Chair of the Centre for London's Industrial Land Commission



'SEGRO's V-Park Grand Union is a pioneering six story light industrial building which will plug into St George's Grand Union mixed use neighbourhood in Brent, West London'.

My crash course in commercial property, when I joined the industry back in 2002, taught me that there were three principal types – office, retail and industrial. Most of the next decade or so was taken up with advocacy on behalf of the first two with not a great deal of attention paid to the third. This was a glaring omission on my part especially since, as a Brummie – and one who grew up pretty much on the doorstep of Cadbury's chocolate factory in Bournville - I should perhaps have had a stronger appreciation than most of the necessity for the sort of space where businesses can produce all those vital consumables on which we depend and manage the residue products that result.

In London, at the present time, the land needed for all those vital processes is under threat. Other uses, specifically housing, are leading to extensive loss of industrial land and what is left is becoming more expensive as it is swallowed up for large logistics developments. In the last 20 years, the city has lost almost six million square metres, about 23% of total industrial space. And what is left is in high demand with a vacancy rate of only 4%, lower than for office space. Because of this industrial land values are rising, making it difficult for smaller and emerging businesses to compete with sectors willing to pay substantially more for central locations.

At the Centre for London we are deeply concerned by this trend which is why we set up a Commission to look at the future of industrial land in the capital. We published our interim findings at the end of September and we hope this will start a serious debate around why industrial land matters and what we need to do to ensure there is enough of it and in the right place.

So why is industrial land important? The first thing to note is that the term 'industrial' is probably too general since it disguises a huge range of different uses – from small maker space, producing anything from sushi to tea trays to sophisticated jewellery, to large refineries such as Tate and Lyle's facility in east London, to highly necessary waste recycling centres and utilities and of course to the logistics and data centres that facilitate wider business and consumer activities. Some of these activities are noisy and smelly and require large amounts of space, some need to function round the clock - which makes them unpopular neighbours for residential and other

types of development. Conversely, others such as printers, bakers, motor repairers and laundries are nestled into high streets and residential areas and make perfectly acceptable neighbours because they are relatively non-polluting and quiet. This is exemplified by somewhere like London's 'Maker Mile' district in Tower Hamlets and Hackney, where manufacturing and making has become embedded into mainly residential areas. What all these industrial activities have in common, however, is that they provide jobs for Londoners and play a vital part in the day to day functioning of a successful city. They also contribute to London's role as a centre for innovation, creativity and economic success.

London is, of course, struggling to provide homes for its population and many have argued that industrial land is better used for that purpose – and the extension of Permitted Development Rights will only add to that pressure. But that ignores the need for the people living in those homes to be able to be employed within a reasonable distance from where they live. It also ignores the need for the services to support those homes from the construction phase through to ongoing habitation, maintenance, and

the supply of essential services. Yes — some of those activities could be moved outside the M25 but that adds to transportation requirements and the resulting pollution and congestion is not going to make London a more sustainable city.

So how do we deal with these challenges?

For a start we need a better handle on what is happening to industrial land and particularly where there are specific needs that are not being met. There is clearly a role for the GLA in pulling together this overall picture — and I understand there is work already in progress on this - but there is a danger that broad London wide trends don't reflect accurately what is happening on the ground in the individual boroughs. It is important, therefore, that the boroughs are encouraged and supported to assemble more granular supply and demand data covering their areas and the specific sectoral needs on their patch. There is a lot of data out there, often assembled by the surveying firms, and there needs to be more effort made to collate this and turn into available open-source material that supports local and London wide decision making.

The planning system is probably the first line of defence in protecting industrial land and the London Plan ought to become London's definitive industrial land strategy — with rather less interference from a central Government obsessed primarily with housing numbers. Borough plans then need to take their lead from the London Plan and reflect a more granular statement of industrial land requirements in their specific areas, identifying clusters of smaller industrial sites that need to be protected from alternative development. In addition, the whole plan-making process needs to become more nimble and capable of reacting to a rapidly changing set of needs through a process of shorter term revisions and modifications.

Not all of London's industrial land use is likely to be capable of being met from within its boundaries but achieving the co-operation of neighbouring local authorities is hampered by the more general inadequacies of the duty to co-operate which simply doesn't work. It would probably be a step too far to ask for a wider south east industrial plan but the boroughs should be encouraged to reach out to their immediate neighbours to explore opportunities for expanding their industrial activities and there would be a lot to be said for a more regional approach to infrastructure planning to facilitate better movement of goods and services across the wider south east.

I have already mentioned the many different types of industrial uses and I wonder if we should perhaps become rather more creative in identifying those than could be located closer to, or even within, residential developments. A set of principles or guidance that outlines the different typologies — and their relative 'neighbourliness' - could assist the planning process and some degree of co-location could then become a pre-requisite for getting planning permission for residential and mixed-use schemes. This might also offer the opportunity for creating an element of affordable business space. It is important, though, that any definitions of neighbourliness are not used in a rigid way that could constrain pragmatic decision making by the planners.

The other way of effectively creating more industrial land is through intensification, replacing inefficient old single storey premises with higher quality multistorey developments. Although not popular in the past, it is being pioneered by companies like Segro and receiving strong GLA support.

There are, however, considerable challenges, not least the increased cost of such construction and some sort of financial support, perhaps through an Industrial Space Investment Fund backed by the Mayor and Boroughs, might be needed to help this really take off.

Finally, there is real need for a stronger and more co-ordinated voice to speak out in support of industrial land and the activities it accommodates. Never has there been a sector in greater need of a good PR agent! The Mayor of London and London First jointly set up an industrial sounding board back in 2017 primarily to comment on the new draft London Plan and we understand there is discussion around creating a new version of this body. As far as our Commission is concerned, it can't come soon enough but it is essential that this body should have a strong commercial business presence from both landowners and occupiers who might perhaps in due course take over its running. Perhaps we also need an industrial 'Czar' who can pull together the responsibilities currently spread around a number of Deputy Mayors.

Industrial land and buildings may not be as sexy as tall glitzy offices but making sure we have the land for the production and processing capacity that a thriving city needs is just as, if not, more vital. What's more it could become even more important as we fight to constrain the impact of climate change with a need for more space for reuse, recycling and a whole range of new functions aimed at reducing energy consumptions and carbon emissions. If we do not do something to protect London's disappearing workspace then London's future economic success could be jeopardised — and with it the contribution it makes to the UK as whole. Our Commission will not solve all the current problems but it will hopefully get the debate going and make people realise that whilst London, and indeed the UK as whole, may not be the industrial power house that it once was 'making' and 'processing' still has a crucial part to play in the success of our towns and cities, especially London.

Note: The Centre for London Industrial Land Commission report will be published in mid December



Industrial land provides the space for a wide range of different activities — from the making of upmarket leather furniture at the Bill Amberg Studio in Park Royal to the refining of sugar in Tate and Lyle's plant adjacent to City Airport.

Density, Diversity and Proximity:

The three qualities of an innovative city



Spencer de Grey CBE RA
Head of Design
Foster + Partners

When I was asked to pick my favourite building in London earlier this year, I chose the 1943 Plan of the Social and Functional Groupings of London as a deliberate provocation. Conceived by planners Sir Leslie Patrick Abercrombie and John Henry Forshaw, and illustrated with striking clarity by Arthur Ling, the diagrammatic plan shows London's distinct yet interdependent urban villages and industrial districts radiating from the capital's historic hearts, the West End and the City. Obviously, the Plan is not a building, but I chose it because good architecture begins by responding to its social and physical context. For this piece, I have been asked to discuss the architecture of innovation, and once again, I want to cast the net beyond architecture and focus on what makes cities innovative.

Innovation is a product of the exchange of ideas between people, and the built environment can either improve or impede the flow of knowledge. At Foster + Partners, our clients, be they universities or corporations or city governments, approach us to design innovative spaces. There is, of course, no one-size-fits-all approach, but there are three spatial qualities that are universally applicable when designing spaces for innovation: density, diversity, and proximity.

Soho Street. Bex Walton



Density

Cities have always been the engines of innovation. As Edward Glaeser, the urban economist, wrote: "ideas move from person to person within dense urban spaces, and this exchange occasionally creates miracles of human creativity." Urbanists from Jane Jacobs to Richard Florida have long celebrated the benefits of urban density in catalysing innovation, but it's not urban density per se that creates innovation, but porous density which allows for a continuous flow of people, and by extension, of ideas.

A 2019 study by Maria P. Roche at the Georgia Institute of Technology showed that a ten percent increase in street density and connectivity is associated with a 1 percent increase in innovation. This hard data supports the soft observational analysis that dense urban environments like London's Soho and Shoreditch – which comprise a mesh of human-scale streets and intimate public spaces – tend to foster



Illustration by Arthur Ling, 1943

more interactions between people, leading to greater exchange of knowledge and the strengthening of social networks. Evidently, Soho has been a driving force in London's entertainment industry and Shoreditch in the tech-industry.

Perhaps not surprisingly, Roche's study also found that areas with a higher density of amenities like bars and restaurants are also positively correlated with innovation because colleagues and collaborators who socialise together are more likely to develop a sense of trust and reciprocity, which are just as important as state-of-the-art facilities. It is little surprise then that both Soho and Shoreditch are key nightlife hotspots in London as the cornucopia of cafes and bars, pubs and restaurants function not only as collective canteens and watering holes for local workers, but also attract other Londoners and visitors, making these districts vibrant around the clock and across the week.

Diversity

Density of people and amenities is fundamental, but it alone cannot sustain innovation. It needs to be combined with a diversity of expertise and organisations to help spur innovation. Alfred Marshall, the celebrated Cambridge economist, coined the term 'industrial district' in 1890 to describe the innovative power of the clustering of interconnected industries and institutions which are at once cooperating and competing.

Silicon Valley is an example of an industrial district par excellence. It has been so successful that the term Silicon Valley has become a synecdoche for the high-tech sector, and the word Silicon has become a powerful brand for other high-tech districts around the world: Silicon Savannah in Nairobi, Silicon Sandbar in Cape Cod, and of course Silicon Roundabout in London, to name just a few. Whilst the Valley has become synonymous with industry giants such as Apple, it maintains a thriving ecosystem of start-ups, research centres, public institutions, and venture capital firms.

At the turn of the nineteenth century Detroit looked a lot like Silicon Valley in the sixties and seventies, with a hive of small, dynamic firms and independent suppliers. But the consolidation of the automobile ecosystem into General Motors and Ford by the 1930s hindered the growth of new ideas because the network of small-scale entrepreneurs could no longer compete with the behemoths, and the atmosphere of innovation was replaced with an atmosphere of efficiency. The decline of Detroit is a cautionary tale against industrial monopolies. To protect innovation, industrial districts must safeguard a diversity of organisations of different scales and expertise across the public and private sector.



Churchill College Dining Hall. ACME



The benefits of close-knit diversity of expertise are also seen in university towns. The University of Cambridge, for instance, has produced 110 Nobel Laureates, accounting for 83 per cent of the UK's total. The high-tech laboratories, well stocked libraries, and capacious lecture halls are of course a part of the architecture of innovation, but it is also the inter-disciplinary dining halls where the seeds of innovation are planted, much like the pubs in Soho and bars in Shoreditch. The recent proliferation of the private sector and venture capital in the city is helping to finance and scale the innovative ideas to the global stage.

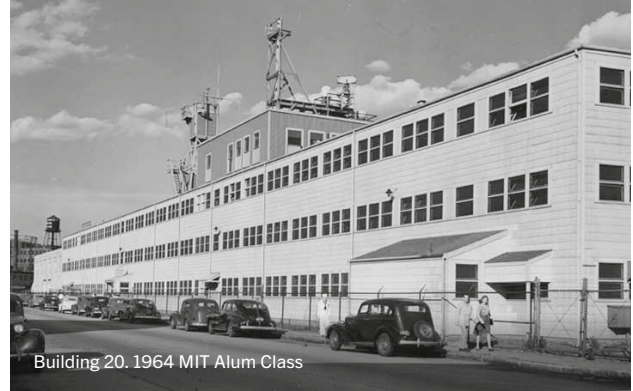
Proximity

Communication technologies have eradicated distance, enabling someone in Cambridge, UK to collaborate with someone in Cambridge, Massachusetts in real time. But this virtual proximity has not replaced the value of physical proximity. In fact, as telecommuting has become easier and cheaper, inner-city real estate has become more coveted and expensive because knowledge-sector industries and workers appreciate the value of chance encounters and the tacit knowledge that is shared simply by being in the same place at the same time. The fact that Silicon Valley is at once the most technologically literate and yet the most expensive place to live in the United States is irrefutable proof of the fact that there is a premium on physical proximity.

On an architectural scale, MIT's Building 20 is a renowned example of the benefits of proximity. Designed in the space of an afternoon as a temporary war-time facility to develop radar systems, the building remained intact after the war becoming a spill-over facility for unlikely departmental neighbours such as Nuclear Science and the Linguistics department. These unlikely collisions proved to be a boon for its resident scholars who made legendary strides in electronics, physics and linguistics. Noam Chomsky remarked: "It looked like it was going to fall apart. There were no amenities, the plumbing was visible, and the windows looked like they were going to fall out. But it was extremely interactive." The building was so beloved that when it was finally demolished in 1998, some 200 leading figures attended the funeral of the "plywood palace" that bore so many ideas.

The desire to create a highly interactive environment that encourages chance encounters was a key driver for our design of the Bloomberg Headquarters in London. From the sculptural Vortex at the entrance, to the distinctive hypotrochoid stepped ramp, characterised by its smooth continuous three-dimensional loop, to the radial desking system organised around collaborative clusters, the office building was designed to break down the figurative walls between teams. This approach to designing architecture that nudges colleagues to interact is part of a long lineage stemming from the Willis Faber & Dumas headquarters in Ipswich, completed three generations earlier in 1975. The building's open-plan offices are spread over three floors connected by escalators that climb up and down the central atrium. The three-storey escalators serve as an interior High Street for the workers of Willis Faber & Dumas, a place to see and be seen and stop for serendipitous conversations.

When we were designing the Bloomberg Headquarters, together with the client we wanted the building to be a "good neighbour," to give something back. The biggest gesture



Building 20. 1964 MIT Alum Class

was the reinstatement of Watling Street, an old Roman Road that once ran through the site, and the addition of cafes and restaurants at the foot of the building. Curated by food critic Richard Vines, the eateries transformed the office building into an engaging slice of the City, much like the tight-knit and restaurant-lined streets of Soho and Shoreditch. It is easy to forget that the origins of the word company come from the Italian '*con pania*', meaning 'with bread', which is a useful reminder that eating together is critical to cultivating collegiality and camaraderie, and ultimately, collaboration.

Over the past eighteen months many have called the future of cities into question. Yet we need cities more than ever to bring people together to innovate and tackle the challenges we are facing. From the architectural-scale of buildings that promote interactions across teams and disciplines, to the urban-scale of streets and squares that promote interactions across organisations and communities, designers play a crucial role in innovation by encouraging the exchange of ideas. Whether designing new buildings or reworking old ones, architects must begin by peeling back the red line boundary of their site and embracing the wider context both in terms of form and function. This is why the 1943 Abercrombie and Forshaw post-war strategic vision for London is just as relevant now as it was in the post-war era because it reminds us of the importance of urban density, functional diversity and the strategic proximity between complementary industries and sectors.



Willis Faber & Dumas. Tim Street Porter



Watling Street. Dominic Martin

Business Responsibility and Quality of Life, a Personal View



Jeremy Newsum
Former Executive Trustee, the
Grosvenor Estate and Founding Chair,
Cambridge Ahead

There was a time, not too long ago, when local politicians were obliged to pay attention to the views of businesses, because businesses had a vote. When plural voting was abolished, politicians could focus solely on securing residential votes. But businesses have a huge responsibility for the places in which they operate; they don't exist to just generate profit, they're here as part of the community and their interests are wholly aligned with how that community develops in the long-term. So, business views need to be heard by politicians but in a way which doesn't just pay lip service. I've been involved with two successful business organisations formed deliberately to build a dialogue between business and political leadership – London First and Cambridge Ahead and I'm convinced that every city should have one.

Discussions about forming Cambridge Ahead started in 2011 and the organisation finally launched in 2013. Since inception, the fundamental objective of Cambridge Ahead - to build the best small city in the world - hasn't changed. We want Cambridge to be for everyone, in every respect, now and into the future. Over the years, the credibility and influence of Cambridge Ahead has grown in tandem with the respect it is afforded in national and local politics and the media. Our approach has never been didactic; rather than try to engineer a pre-determined outcome, we seek to stimulate the right discussions, provide evidence and allow the natural process to deliver the results. So, while our short-term focus may change from year to year, the long-term aims remain the same.

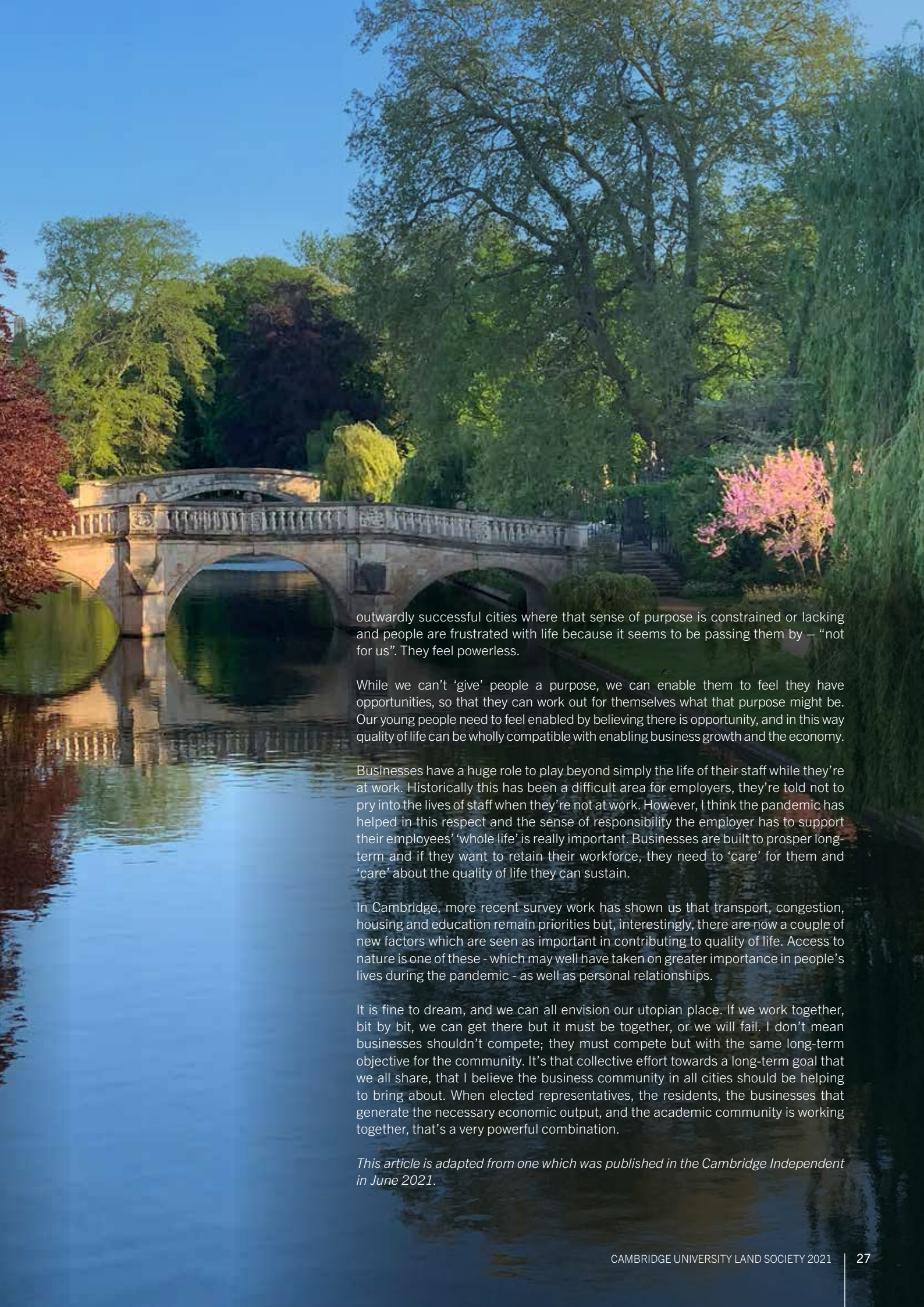
Success (that is added value perceived by members and by political leadership) is not guaranteed. London First came of age during the proposals to establish a Mayor of London and the consideration of Crossrail, while Cambridge Ahead was the instigator behind the Cambridgeshire Independent Economic Review which produced a report of value for all political leaders in the County.

Thank goodness we have moved on from a time when business determined its purpose and measured its success solely through the short-sighted lens of the shareholders. I like to conceive of businesses (and building owners) in a city as shareholders in that place, each holding responsibility for playing a part in long term success. So often business and politicians are seen to be in loud disagreement, but this is invariably about short term policies. When it comes to long term outcomes, we all want the same – opportunity and wellbeing for the next generations and this is perhaps the best definition for that nebulous concept, “Quality of Life”.

To me it's clear that the ‘quality of life’ of members of any community is an essential factor in its prosperity and long-term success. The Cambridge economy may boom but if the people living and working here aren't able to maintain the quality of life they aspire to, they will soon be moving elsewhere. We can't have sustainable growth, without a quality of life that is continually improving, they are one and the same.

There's no doubt that quality of life does and should relate to place, in that the environment and culture of the place(s) in which we live or spend our time, impact how we feel. If you consider Singapore and Hong Kong, for example, they are in the same part of the world yet are very different culturally and the people living in each would have different views on who has the best quality of life – this is part of history but also part of how they now plan for the future of their communities.

Another important aspect of quality of life is an individual's sense of fulfilment or purpose. There is danger in over-generalising about this because everyone's sense of purpose and fulfilment is different and, with human nature, is never finite or complete. The sadness is that there are parts of most



outwardly successful cities where that sense of purpose is constrained or lacking and people are frustrated with life because it seems to be passing them by – “not for us”. They feel powerless.

While we can't 'give' people a purpose, we can enable them to feel they have opportunities, so that they can work out for themselves what that purpose might be. Our young people need to feel enabled by believing there is opportunity, and in this way quality of life can be wholly compatible with enabling business growth and the economy.

Businesses have a huge role to play beyond simply the life of their staff while they're at work. Historically this has been a difficult area for employers, they're told not to pry into the lives of staff when they're not at work. However, I think the pandemic has helped in this respect and the sense of responsibility the employer has to support their employees' 'whole life' is really important. Businesses are built to prosper long-term and if they want to retain their workforce, they need to 'care' for them and 'care' about the quality of life they can sustain.

In Cambridge, more recent survey work has shown us that transport, congestion, housing and education remain priorities but, interestingly, there are now a couple of new factors which are seen as important in contributing to quality of life. Access to nature is one of these - which may well have taken on greater importance in people's lives during the pandemic - as well as personal relationships.

It is fine to dream, and we can all envision our utopian place. If we work together, bit by bit, we can get there but it must be together, or we will fail. I don't mean businesses shouldn't compete; they must compete but with the same long-term objective for the community. It's that collective effort towards a long-term goal that we all share, that I believe the business community in all cities should be helping to bring about. When elected representatives, the residents, the businesses that generate the necessary economic output, and the academic community is working together, that's a very powerful combination.

This article is adapted from one which was published in the Cambridge Independent in June 2021.

LIFE Science

— it's as much about the **former** as the **latter**




Philip Nell
Fund Director
LaSalle Investment Management

I am a first-generation real estate professional. Unlike many of my contemporaries at Oxford Poly I did not come from a long and distinguished line of chartered surveyors. At the time I remember it made me feel a little inadequate. However, as I have gone through my career, I've seen more and more diversity in the backgrounds of those around me. Sure, as an industry we are still hardly a reflection of the society we seek to represent, but it's fantastic to see greater numbers of talented young people coming to property without their mother's or father's footsteps to guide them.

So, what then did I want for my children as they started to think about their careers? Real estate is an incredible industry to work in. Being involved with an asset class which sits at the heart of our communities and which shapes people's lives is incredibly rewarding. However, it appears it wasn't the path for them. My two eldest children have (completely independently, it seems) plumped for a career in Pharmacology. That's the study and development of medicines to you and I, and one of the larger bio-medical sciences. This is probably due in no small part to the fact that we live near Cambridge, where life science is all around us.

What does all this have to do with real estate? Well, going to numerous open-days at universities offering Pharmacology degrees gave me a real insight into the depth (and geographical spread) of the life sciences industry. Universities are research-led, and industry is working in collaboration with them. Just look at the development of the Covid vaccines over the last 18 months. Industry and academia are working in partnership across the life sciences industry, and it's not just the obvious locations like Oxford, Cambridge and London which are seeing the investment. Cities such as Manchester, Bristol, Newcastle, Leeds and Liverpool are also witnessing significant collaboration between industry and academia.



But it's not just the fact that the UK has some of the world's best universities which is benefitting life sciences in this country. We know that demand, as well as supply, greatly impacts the efficiency of markets, and in that regard the UK really is a global leader. The NHS is the world's largest single-payer health system, and is committed to working in partnership with both academic research and private industry to deliver ground-breaking advances in treatments. Again, just look at the recent example of the Covid pandemic. The Department of Health were able to buy vaccines in huge bulk, and the NHS were able to roll-out an incredibly efficient national vaccination program.

However, to understand the life sciences industry in the UK requires much greater analysis than simply looking at "Big Pharma". It is estimated that the sector consists of around 6,300 businesses generating about £81 billion a year and employing over 250,000 people. The UK Government even has an Office for Life Sciences, and an ambitious target of increasing R&D spending to 2.4% of GDP by 2027. Universities are also using life science as a way to launch unprecedented numbers of new companies. For example, in the year to the end of March 2021 Oxford University Innovation assisted in the launch of 37 new companies (a new record), and in Q1 of this year alone, existing Oxford University companies raised over £400m in 3rd party investment. In March one of its biggest, Oxford Nanopore (a DNA-sequencing tech company) announced it was considering an IPO on the London Stock Exchange which could value the company at between £4-7 billion.

In this context, it is hardly surprising that the real estate world is embracing the opportunity of life sciences so wholeheartedly. The combination of a global pandemic and a structural shift in some of the more traditional real estate sectors has had a push/pull impact on investor demand. It feels like the UK is almost uniquely positioned to benefit from this shift, and that life sciences may be the commercial sector the UK real estate industry has been craving. However, is underwriting investment decisions going to be easy? Real estate is a consequence, not a driver, of what is going on in life science around the country. However, efficient real estate (in locations which are talent-rich) can only improve the outlook for the sector. But if we think this is simply about the provision of wet (and dry) labs, we're seriously mistaken. Universities are fixed, but capital, industry and talent is mobile. I believe that one of the reasons why Cambridge has become the life science success it has is because the university controls vast tracts of land around the city. The Cambridge Science Park to the north of the city was delivered on land owned by Trinity College, and way before Oxford's equivalent (which was delivered on land formerly occupied by Austin Rover!). Addenbrookes sits surrounded by university-owned land, enabling the enormous expansion of what was already a world-class research hospital. However, I think the key to its future success is housing, not commercial/research space. Why did my children decide to go to university in Manchester and Newcastle (apart from the fact they're both a long way away from their parents)? Money. They want to study where they can also enjoy being a student, and when they graduate they'll want to live where they can also enjoy living. One of the greatest constraints on the continued growth of these industries is good quality and affordable housing, and it's ensuring the effective delivery of that which is as much a part of this story. Leading learning institutions need to continue to ensure young (and old) talent wants to locate there. Creating places where this talent can live is as important as ensuring there's the space for it to work in. We mustn't forget that science is incredibly creative career. At school we think of science as essentially learning how the world works. However, that's because we're learning about other people's discoveries. If you take up a career in science then it's you that has to do the discovering. This is new stuff, ground-breaking and exciting. For that reason, it attracts people who want to live in vibrant and exciting places. There is a really important role for the real estate industry to play in the future growth of life sciences in the UK, and it's in creating world-class places for people to live, affordably.

A good friend of mine's son works for Astra Zeneca, and was recently relocated with his young family from Philadelphia to Cambridge. After a year or so he decided to move back to Manchester, where he'd first started working for the company (and with their blessing). Not because he didn't like living near Cambridge, but because he couldn't afford the same living standards for his family as he could in Manchester. Talent moves, and industry knows that.

Adding life to the market



Andy Martin
AJWM Consulting

For nearly 2 years the world has been rocked by another Black Swan moment. The continuing pandemic has changed our lives, and it looks like some of these changes will become permanent. What is perhaps remarkable is how readily we have adapted to changes in both work life and homelife. These adaptations have also brought about changes in our expectations and requirements for real estate and the priorities looking forward. For investors, a new theme has emerged being that of 'resilient' assets, those whose function and demand have survived or grown through these adaptations.

Certainly, a number of these changes were already in motion and the pandemic just accelerated the rate. The most obvious is in the retail space and the explosion of home delivery and logistics demand to service it. So, too, has been the reliance on social media and online technology which is fuelling massive growth in subscription services, data supply, new remote services and wireless technologies. Remote working has brought with it virtual meetings as standard. The growing acceptance of a digital life also brings with it a risk due to cybercrime and the demand for a means of protection.

Investors have seen this boom in new technologies as the place to be, best demonstrated by the rise of the NASDAQ 100 index from its pre-pandemic level in February 2020 by 61% as of September 21, compared with the S&P 500 index rise of 35%. The hunt for talent in these industries also involves adjusting the terms of employment not just to pay but flexible working, quality of space, wellness, vesting of equity for alignment, and clear corporate policies on the issues that matter to this generation on diversity and climate change. All of these issues influence the role of the workplace which must adapt to these challenges.

Moving to technology investing, one area which is capturing a lot of interest is that around life sciences. The movement of new monies into this sector was happening apace before we knew anything of the pandemic. Understandably, the rush for a vaccine brought the sector under the spotlight and new investment flowed to the sector to meet the massive funding coming from central government into creation and distribution of vaccines but also the prospect that new mRNA technologies might bring new treatments to other global diseases.

In 2020, 90 biotech companies raised £14.6 billion through IPOs according to the UK Bioindustry Association, a further £25.7 billion was raised through follow on transactions, £24 billion in other financing and another £25.7 billion through venture in private finances. Much of this new money is focused on California and Massachusetts. UK based biotech raised a record £2.8 billion, a fraction of the money flowing to

the sector in the USA. Importantly, this growth in the USA is feeding rising demand and expansion into the UK, often seen as the best place for life science innovation outside the USA.

Of course, all of this brings renewed focus to real estate. As you would expect this market has attracted significant new monies as it falls dead centre of the same view of resilient asset classes as do logistics, data storage, food retailing, medical centres, self storage and residential markets. In 2020 RCA reported Life Sciences formed 2% of all Global Commercial Real Estate transactions up from around 1.5% in 2019. By June 2021, trading for the year so far had risen to close to 4% of the market.

In the USA, the market is certainly more mature with several large players with significant portfolios such as Longfellow, Biomed Realty, Alexandria, Divco, Bain Life Sciences and IQHQ. Many have taken advantage of new money flows raising significant pools of equity particularly from sovereign and long term pension reserve funds. Other more established office operators are expanding into sector such Tishman Speyer and Brookfield. In the UK & Europe, the market is smaller but no less attractive and some of these larger US players are growing here putting more pressure on demand. More locally, Legal & General has built a significant presence in a venture with Bruntwood, Axa by acquiring Kadans has amassed a large portfolio in mainland Europe, and Harrison Street has also built a strong position in the market. On both sides of the Atlantic rents are pushing ahead of prime office rents and capitalising the right product ahead of their office equivalents.

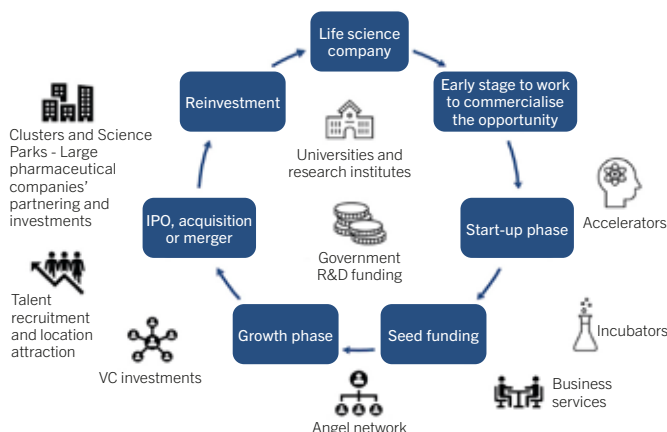
The key is location and the focus is essentially limited to clusters around science-based academia or research institutions, such as the UK Atomic Energy Authority at Harwell. In the USA; Boston, San Francisco, San Diego, Raleigh Durham (the research triangle) and Washington DC/ Baltimore are the top life sciences clusters. Of the £16.9bn of venture capital financing in the USA £11.1bn went to business in San Francisco, Boston and San Diego. By contrast, the UK received £1.38bn. In the UK; Oxford, Cambridge and London around St Pancras and now also White City are drawing the most capital along with areas around Manchester.

The unique thing is the ecosystem these clusters create' often described as a "vortex" as it manages to retain new growth within it. There are, of course, other clusters outside those mentioned but whether in Europe, USA or elsewhere around the world it is the proximity to the science that remains key. These vortices "suck in" those businesses that feed the ecosystem- venture capitalists, financiers, support functions and more research. New entrepreneurial space opens for incubators and invention

space such as the lab sharing operations that Biolabs have rolled out across the USA. It is insufficient just to look at building new research facilities without this ecosystem being in place.

“...an innovation ecosystem is a synergistic relationship between people, firms and place that facilitates idea generation and accelerates commercialisation” (Katz & Wagner-Brookings Institute)

The Urban Land Institute in Europe launched a report on Life Sciences earlier this year as part of the development of a new product council. This report recognised the connectivity of the elements of the ecosystem crucial for success in this field.



Source: Adapted by ULI from Majava et al., 2016.

I've been lucky enough to have acquired a first-hand knowledge of this recently working with Wellcome Trust to gain planning on the extension of their world renowned Genome Campus south of Cambridge. A further 150,000 m² with 1500 new homes for the campus workforce will have the substance to create its own ecosystem. More recently working with Brydell, who have acquired a portfolio of properties in central Cambridge to create a new offering to the science-based community on the doorsteps of the colleges. This work led me to use the opportunity of my summer stay in the USA to meet the experts in delivering life sciences real estate there. My meetings with architects, developers, occupiers, financiers and advisors took me to Durham, Boston, New York, San Francisco and LA. I saw first-hand the ecosystems that have fostered these markets. The key has been the concept of collision space. It is the thing that designers and operators see as being fundamental to the way in which the building and its environment facilitates the spark that comes from chance conversations. As Steve Jobs said, "there is a temptation in our networked age to think ideas can be developed by email and iChat. That's crazy, creativity comes from spontaneous meetings, from random discussions- you run into somebody you ask what they're doing you say 'wow' and soon you're cooking all sorts of ideas!"

The chart to the right, extracted from the IBM life sciences report underlines these words.

The Crick Institute at St Pancras was designed to ensure the 3500 scientists in its million square feet are in this exact environment. This is also the focus of Mark Granovetter at Stanford the creator of weak ties social theory looking at our entire personal community as it influences who we are. It does also provide the reason why I, like many, believe the office still has an important function in the culture of a business.

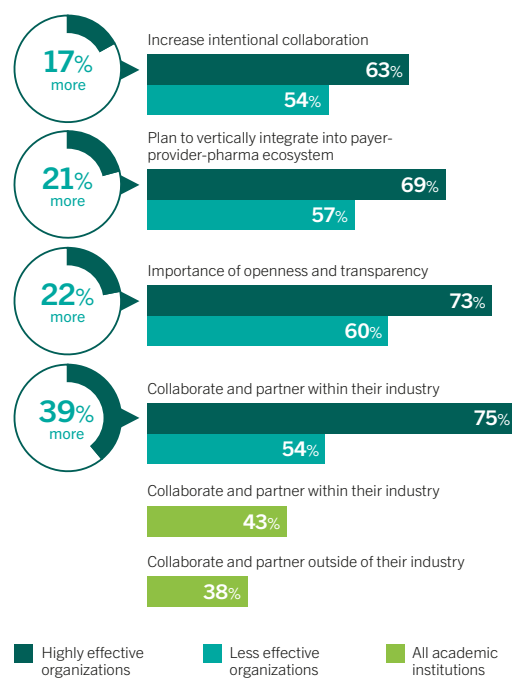
The most discussed ecosystem in life sciences is that of Kendall Square in Cambridge, Massachusetts which is the premier location of the 15 million plus sq.ft. of Life Science accommodation in the area. Across the river from downtown Boston, Kendall Square amounts to 42 acres and was originally chosen by President Kennedy as the launchpad for his moon mission. Abutting MIT, science was next door. Self proclaimed as the "Most Innovative Square Mile on the Planet"; this has become one of the hottest centres for life science real estate in the world.

The key to its success has been the ecosystem which supports and the "vortex" that ecosystem now sustains. As an early planner of this area was reported in a research paper I read as saying:

"They didn't give a damn it wasn't meeting the technical standards. So, we realized that what really mattered was the environment. And the ideas, which are the most important thing don't come from a building that's cubed. They actually happen when people are having a cup of coffee, taking a lunch break. So more and more we incorporated social space interaction spaces into the programming of the program"

As the UK positions itself for the post pandemic world, the leadership in genomic sequencing and in the vaccine roll out stands it in good stead for the development of life sciences industry. There are important clusters developing around some of our provincial cities beyond the London, Cambridge and Oxford triangle and there's plenty of money looking for a home in this expanding sector. This will become important to the UK's future as a leader in the field and help push growth to the regions. It has a relevance for our urban future too.

"More than ever, cities are human magnets. Why? It seems that in the collective frenzy of the network, the death of distance theorists forgot something crucial to human experience: the importance of physical interaction between people and with the environment" – Carlo Ratti, The City of Tomorrow.



The value of openness, transparency and collaboration when pursuing innovation.



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Katherine Friend, MRICS
Director – Investment & Asset
Management, Howard Group



Colin Brown, MRICS
Director – Development
Howard Group

Every subsector of the commercial property market has cycles but you can't go through a pandemic such as we have, and Brexit, without significant changes.

Katherine Friend, Director – Investment & Asset Management, Howard Group, says that pre-pandemic cracks were already forming in some of the more mainstream retail space: "There was a recognition, even before Covid hit, that the UK in particular has a total retail floorspace that is far too high for the future.

"What the pandemic has done is shorten the period of decline from ten years to twelve months with retailers going into administration, store closures and supply chain disruptions. So, those schemes that were struggling pre-pandemic are obviously really struggling now.

"We are seeing a step change in landlords trying to find different uses for a lot of schemes but it's a huge challenge. It's very expensive to change them in any meaningful form."

Availability versus demand

One of the most recent examples of this in Cambridge is the 12-acre Grafton Centre site in the city centre, which is being marketed as an opportunity to repurpose the scheme into life sciences and laboratory accommodation.

The post-Covid shift in real estate availability and the potential, or not, of repurposing schemes to meet sectoral demand, represents an evolution in the market and is leading investors in search of yield to diversify and seek exposure to other property types.

Student housing, logistics and warehousing, and laboratory space are examples of the more niche investments that have surged in popularity from a market requirement and investor perspective.

Katherine says: "I don't think we've felt the full impacts of Brexit yet and the effect on the future demand for commercial space and, in particular, office space. Yet, the lab market is booming.

"It's a relatively small market across the whole of the UK, but demand is huge, especially in the Cambridge Cluster. The pandemic has shone a light on R&D and life science real estate from an investors' perspective, recognising that the subsector is something worth investing in."





The challenges of repurposing space

The Works at Unity Campus - Howard Group's 260,000 sq ft, high-specification business and technology R&D park designed to complement and support the South Cambridge Cluster - is a great example of how a building, which was never intended to accommodate lab space, was able to be adapted to suit life science usage.

Colin Brown, Director – Development, Howard Group, says the incredible lack of lab space set against phenomenal demand was and is presenting a severe roadblock for life science and R&D companies: “Lab occupiers have limited visibility on their occupational requirements and may only realise they need more space three to six months before it becomes a necessity. Companies will often go through substantial series A or B funding rounds and only then seek the property solutions to facilitate their expansion plans. The problem for many fast-growing businesses right now is that there are no buildings to accommodate that growth, placing a hand-brake on innovation and discovery in some of the most important research ecosystems in the country.

For a variety of reasons, The Works is a quite unique offering in the Cambridge market, and as such presented a distinctive set of challenges and opportunities. The repurposing of an existing concrete framed industrial unit was not originally intended to have such a focus on the life sciences sector, focussing more on the office and tech markets.

The Works, Unity Campus, South Cambridge



Colin says: “With Covid putting the brakes on active office enquiries and continuing pressure on lab supply, we were able to work with prospective occupiers with a ‘can-do’ attitude, on creative solutions to design space which met each of their specific needs”. Thankfully, we have been able to provide solutions to each of our customers to ensure that they can do great research in a great building. The slightly disruptive and playful design of the building appealed to a new generation of scientists who have historically had to put up with fairly bland and utilitarian facilities.

Faced with relatively low ceiling heights, solid concrete floors, tight rooftop plant layouts and an office-focused M&E base there was a huge amount to consider. We used the perforations in castellated beams, flipped the flow direction of ductwork, pumped drainage, optimised internal layouts and added extraction equipment to provide full CL2 lab specifications”. Colin adds: “Occupiers were willing to make compromises to be in the heart of the South Cambridge Cluster in such an aesthetically-pleasing building with affordable rents. We have learnt a huge amount about what life sciences occupiers need and want and were excited by the challenge of modifying the space”.

Taking the lessons learnt into the next investment

Howard Group has recently revisited the Unity Campus masterplan. The next three new buildings planned for the site will focus on the unfilled demand for lab, R&D and high-tech facilities as well as more traditional office space.

“The next phase of buildings at Unity Campus will have considerably better ‘bones’ in terms of their lab-enabled credentials and design,” says Colin. “These will be well appointed, high spec, flexible buildings which address the fundamental needs of lab occupiers and can be fully operational within weeks of moving in.”

Sustainability and workplace wellbeing are also at the forefront of Howard Group’s development decisions. The latest iteration of the masterplan for Unity Campus allows for a larger, more pedestrian friendly public realm as well as whole life low-carbon building materials, efficient air handling and heating/cooling systems, and photovoltaic panels on each building with the target of a BREEAM Excellent rating.

Regeneration and revitalisation

As part of its Centenary Vision, Howard Group has redefined and articulated its purpose in terms of how it seeks to enrich and change lives through its activities and real estate investment.

Defined by three strands; social impact, environmental and sustainability, and economical and financial performance, the Centenary Vision highlights how the Group’s projects and ways of working will fulfil its values of responsible stewardship and investment to leave a legacy for the next generation.

The planned net zero carbon multi-level industrial redevelopment of The Enterprise Centre in Lewisham is an illustration of these values in action. The investment in the regeneration of this area in South London will have a positive social impact on the wider community improving both the quantity and quality of employment space in the borough.

Meaningful transformation

The challenge for the real estate industry in a market of disruption, instability, and change is to balance the social, environmental and financial dimensions. There is no business as usual in our industry; just the opportunity to use our experience and insights to ‘do the right thing’ which will stand the test of time.

The emerging future of the built environment is not focused on just architectural brilliance and efficiency of space, but directly aligned to its contribution to the economy, the environment and the community.

The dawning of a new era



Alistair Meadows

Head of Investor / Developers Clients, JLL
JLL UK Board sponsor for JLL's Life Sciences practice
University of Cambridge, Land Economy graduate

'Out of bad comes good' one of my teacher's used to say.

As we emerge from the pandemic, we've all reflected on our own personal and professional experiences over the last 20 months.

Health and recovery have been front and centre of many of these reflections, overlaid with the megatrends of technology and sustainability.

The increased focus on health and the role of the real estate industry as a facilitator, enabler and connector for the

knowledge intensive industries has been a key ingredient to our recovery story.

As a consequence, we've witnessed a surge in demand for science and technology led space and unprecedented levels of capital (public & private, equity & debt) investing in the rapidly emerging 'Life Sciences' sector.

In turn, locations that can create successful clusters and ecosystems linking education, R&D and investment have been at the forefront of activity in the sector.

Across Europe, the UK is dominating activity, and this is primarily driven by the "Golden Triangle" with Cambridge, Oxford, and London demonstrating advanced, established Life Sciences markets.

Private investment has surged with venture capital at record levels and global real estate investors rapidly creating dedicated 'Life Sciences' strategies.

As an illustration, one pension fund investor is targeting to invest 10-15% of its global real estate portfolio in Life Sciences in the next 5 years, providing in excess of \$10b to invest in the sector. This story is replicated across many other institutional investors.

Alongside record levels of private investment there has been an increased interest from Government.

In the UK, the government has plans to increase expenditure in R&D from £15 bn to £22 bn per annum by 2027 and has pledged an increased funding to UK life science companies of £1 bn in its new 'Life Science Vision'. This is supported by the new c.£1 bn UK & UAE Sovereign Investment Partnership in Life Sciences.

However, investment-driven demand is moving ahead of real estate supply, creating an imbalance leading to a focus of creating new supply through development and/or conversion of existing assets in the office and retail sectors.

This has shone a light on the lack of development, management and operational expertise in the sector.

As a consequence, we see new marriages of 'equity with expertise' with institutional investors acquiring and partnering with developer/operators.

This theme reminds me of the emergence of the 'Living' sectors over the last 5-10 years with investors accessing the sector via JV partnerships and M&A.



AXA IM's acquisition of Kadans Science Partner and Trinity IM / Harrison Street's JV acquiring BioCity Group to create 'We Are Pioneer Group' being two significant examples over the last 12 months.

A broad spectrum of investors and developers are now actively building science and technology led portfolios. The likes of GIC, Blackstone / Biomed, Brookfield / CoreLife Investors, Oxford Properties, IQHQ, and Brockton Everlast all prominent.

Many of these emerging trends and themes we are now seeing in the nascent UK / European Life Sciences markets are correlated to the US experiences over the last 5-10 years. Again, parallels with the US Living sectors.

As an example, we are starting to see a premium on life science space (labs and offices) compared to generic office accommodation, a trend that is well-established in the US where a premium approaching 100% between office and life science supply has been recorded in Q2 2021 in some leading clusters like Boston.

As well as focussing attention on the sector in general, the COVID-19 pandemic has also started driving a demand for more specialist manufacturing space, driven by a desire to return previously offshored manufacturing to home turf.

This is resulting in potential shortages of GMP biomanufacturing space. The is also exacerbated by a 29% fall since 2009 in production volumes from life science manufacturing facilities in the UK (UK Government Life Sciences Vision).

The supply/demand imbalance is may be a blessing in disguise for emerging clusters in the UK and Europe.

Increased demand and investment coupled with available space could propel several emerging markets forward.

In the UK, Stevenage for example has become a hub for cell and gene therapy, following the establishment of the GSK R&D headquarters there. This has created a clustering effect with the Cell and Gene Catapult also being based there.

Comparably, Manchester is paving the way for the North. Manchester has seen massive recent investment into Life Sciences developments with Bruntwood SciTech partnering with the University of Manchester, Manchester City Council, Manchester Metropolitan University, and others to deliver c4.3M sq ft of life science and innovation enabled space in Circle Square, ID Manchester, and CityLabs.

Similar support from Government within the Life Science Vision is supporting the idea of Manchester becoming a world leading centre for Genomics and Data and the construction of HS2 may burgeon future interest in the region and establish Manchester as leading UK/European cluster.

Although the UK life science sector leads the way in Europe, it is by no means alone. Significant Life Science clusters are emerging in Paris, Utrecht, Munich, Medicon Valley, Zurich, and Barcelona with a focus on universities as the catalyst for talent and innovation.

Long term, sustainable, ecosystems will undoubtedly require a cocktail of talent, innovation, technology and partnership.

Global occupiers are responding, for example with MSD, establishing a £1 bn R&D site at King's Cross. Ideally placed to draw on talent and intellectual property from the London Bioscience Innovation Centre (LBIC), the Francis Crick Institute, and University College London.

Much of this interest is also surrounding companies strengthening gaps in their R&D portfolios by acquiring new technologies. Prime examples of this, are Sanofi's acquisition of Cambridge based Kymab for £1.05 bn in April 2021, strengthening their drug and vaccine capabilities.

Integration of technology is at the forefront of innovation. Digital health and pharma tech subsectors have seen the greatest increase in company numbers in recent years. Increases like this will require increased connectivity, proximity to data centres, and sufficient power and data transfer infrastructure.

Nevertheless, the increased attention of companies in the subsector provide opportunity for the UK to become a global leader in digital health. A major driving force for this will be the levelling up of the NHS through its "Digital Transformation" strategy.

Similarly, the integration and adoption of technology across the wider industry will propel Life Science growth forward. For example, the recent development of an algorithm by Google's DeepMind that can predict protein folding structures has created enormous opportunity for drug discovery and development in the future.

Increased partnerships between public and private sector are emerging. Partnerships such as this can leverage the extensive land often held by public sector bodies in parallel to the finance raised and generated through private sector companies.

An example of this is University of Oxford's partnership with Legal & General in 2019, to form the Oxford University Development (OUD) partnership.

This £4 bn investment partnership will provide thousands of new homes for staff and students, as well as several innovation facilities such as the University of Oxford's £200m 'Life and Mind Building', announced in 2020, that will serve as a home for the departments of Zoology, Plant Sciences and Experimental Psychology.

Finally, as we're witnessing with COP26, the world's attention is on the environment and sustainability.

However, to date, the Life Sciences industry has had difficulties integrating sustainable practices into everyday operations and their real estate portfolios.

Nevertheless, the benefits of embracing sustainability are clear, more so as environmental regulation becomes common place in the future, and will likely mean higher costs for business that do not act early to change. As such, Life Science industry players will need to ensure they marry environmental impact with the unprecedented demand for specialist buildings.

This will need a mix of 'Art & Science' from all of us across the real estate industry to ensure our long term, sustainable success personally and professionally.

A changing paradigm in the life sciences property sector



Liam Nicholls
Partner | Creative Places

Since 2020, we have seen unprecedented weight of capital entering the life sciences property sector in the U.K., particularly the 'golden triangle' of Oxford, London and Cambridge. Yield compression is well over 1% on where we stood in 2019, and every site, building or scheme available in the sector is hotly contested by high quality capital deployed from a variety of backgrounds. There seems no easing of this into 2021 or signs of slowing. Here at Creative Places, we specialise in research and development property investment and development and as such have found ourselves in the 'eye of the storm'. Some thoughts from me below.

The drivers of this trend have been, as I see it, 3-fold

Firstly, the fundamentals; ageing and unwell populations have driven increased investment into healthcare R&D companies, with a sectoral shift towards advanced therapies as a key area of investment. These companies in turn have high headcount growth and need appropriate space. This has been putting the sector on an upward trajectory pre-pandemic, and had made the life sciences sector somewhat a darling of US real estate. Those investors from over the pond have been looking further afield to deploy capital, as we have recently seen with Blackstone backed Biomed making another purchase in Cambridge.

The second has been the circumstances of the pandemic which include a multitude of related factors; nervousness around the more traditional sectors of office and retail which look more shaky than resilient laboratory space (you can't work from home in a lab), increased government focus on research spending and simply the fact that the life sciences sector in the U.K. is getting more media coverage and its successes have been far more publicly touted as a result of the pandemic. It would be difficult to argue that AstraZeneca and Pfizer are not more household names today than they were 2 years ago.

The 3rd and final reason I would give for the trend is the strength of the U.K. and particularly the golden triangle as a location for R&D. The combined research power of Oxford, Cambridge and London universities is in unparalleled in any geography of a comparable size globally, and that isn't counting research institutes such as the Francis Crick in London and the LMB in Cambridge. Healthcare R&D companies want to leverage this, and emerge themselves in the environments that provide additionality in getting their products and services to market more quickly, and investors follow this demand.

So, what for the future?

For this I have to turn to 1 and 3 above. The fundamentals of the demand drivers and the quality of the U.K. as a location for this kind of activity are here to stay. The pandemic, we hope, is not. The thing which has been stark about this trend

has been the number of serious players looking to get into the sector. Not all of these have had one successful purchase yet, let alone reached their fill of investment into this space. They are a diverse bunch too - private equity, REITs, pension funds and sovereign wealth parties are all in the list. So, my prediction is that any easing will be cyclical rather than structural.

Historically scale has been a constraining factor, with relatively little stock to be contested. This is changing - development pipelines for Oxford, Cambridge and London are now significant which is a good thing considering the pent-up demand for laboratory space that we see in these markets. The constraining factor now could actually be more around knowhow. There are now more clients in the sector than there are specialist advisors. Investors and developers need to make well informed choices on issues like specification and understanding of sector specific drivers such open innovation and ecosystem curation to make projects successful, and those clients without existing knowledge may find specialist advice difficult to find in what is an immature sector for the U.K.. This is a difficult thing to change overnight, with sector specific experience and training required to really embed the required skill sets required, but I am sure that as practices grow their teams that this will happen in time, given the size of the prize.

As for Creative Places, we are enjoying the period where our sector experiences the attention and growth that it deserves, and are actively recruiting new staff to expand the team. If you would like to learn more about us and our work at this exciting time, please do get in touch.

The Case for UK Life Science Investment



Oliver Woodside
Associate, Eastdil Secured

A flurry of investment into Life Science or, more broadly, Science and Innovation real estate, has gripped news headlines over the last 12-18 months which has been significantly accelerated by the COVID-19 pandemic. Science and Innovation real estate at its core reflects specialist property and is inherently linked to the Knowledge Economy. The investment thesis hinges primarily on the fact that knowledge-based companies are both location-inelastic towards their search for talent and invest considerably in their R&D space, making them more likely to remain for the long term compared to a traditional office user.

The Science and Innovation real estate sector provides an attractive source of diversified rental income as well as the potential for enormous growth. This growth is fuelled by ever-increasing public and private contributions to R&D expenditure, demographic trends (such as an ageing population) as well as the convergence of science and technology industries. As a result, this alternative real estate asset class is attracting unprecedented pools of capital from some of the world's leading institutional real estate investors.


The UK is Europe's leading centre for Science and Innovation and stands out relative to other European countries due to the significant strength of its academic research base, substantial public and private investment into R&D as well as world-leading talent. While investment is focused primarily within the Golden Triangle (Cambridge, Oxford, London), there are numerous hotbeds for innovation up and down the country.

Despite this academic excellence, the UK still lags considerably behind the US across a number of factors, from VC funding to total supply of quality real estate solutions. It is this nascency paired with the promise of growth that has caught the attention of global capital sources, many of whom are already significantly invested across the sector in America.

"Over the last 12-18 months we have seen significant cap rate compression in the core US markets of Boston, San Francisco and San Diego; this is a direct result of the weight of the investment capital focused on the sector, limited investment opportunities, and strong fundamentals at the asset level. Many investors are focused on a global approach to the sector given the complementary science and research conducted in other markets that are emerging" notes Sarah Lagosh, co-head of Eastdil Secured's global Life Science business. The wider team have worked on over \$70.2 billion of Science and Innovation transactions globally, including the initial take private of Biomed by Blackstone in 2016 and the subsequent \$14.6 billion recapitalisation in 2020. Aside from Alexandria REIT, nearly all groups that are invested in the sector in the US are now also considering investments in the UK.

Despite the recent surge in investment activity, deploying capital into a UK and European Science and Innovation real estate strategy requires a leap of faith. A clear dataset proving outperformance versus traditional office does not yet exist for the UK, which has led investors to look to the US for conviction.





The US market is primarily focused in two regions; on the West coast (San Francisco and San Diego, California) and the East coast (Boston / Cambridge, Massachusetts). In both regions the sector has witnessed significant growth over the past two decades across occupier and investor markets with laboratory rents in Cambridge, MA increasing at a 9.8% CAGR from 2014 – 2020. In recent years, we have witnessed increased institutional investor interest into other university and hospital-anchored cities where the talent and intellectual property reside, such as Raleigh-Durham, North Carolina, Rockville and Baltimore, Maryland, Houston, Texas and Philadelphia, Pennsylvania.

Investors have been keen to gain exposure to Science and Innovation real estate which has, in turn, created a shortage of investable stock. In 2020, Eastdil Secured bid volumes for US Science and Innovation real estate outweighed transaction volumes by almost 10 times, highlighting the sheer weight of capital looking to invest in the sector.

Investors have now created separate and sizeable capital allocations to the sector as implied Life Science cap rates continue to trend downward. Since Blackstone's take private of Biomed placed the sector into the spotlight in late 2016, implied cap rates for Life Science real estate in the US have outperformed conventional offices, as shown in Figure 1.

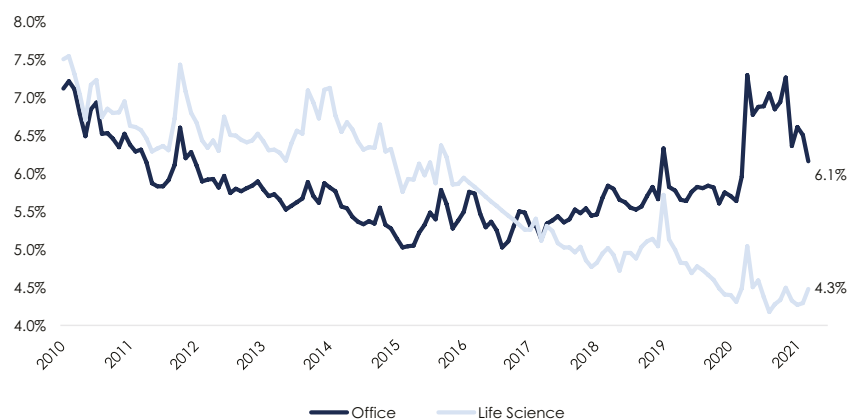


Figure 1: Implied office and Life Science cap rates. Source: Green Street Advisors.

Focusing in on Cambridge and San Francisco, we see that market leading clusters have experienced double-digit rental growth in addition to cap rate compression (Figure 2). Lab rents across the Cambridge and San Francisco markets have priced at a premium to class A office stock, whereas lab vacancy rates have fallen systematically below that of offices (Figures 3 and 4).

	2019 Cap Rates	2021 Cap Rates	Rental Growth (2019 – 2021)
Boston / Cambridge, MA	4.50% - 4.75%	4.00% - 4.25%	15%
San Francisco, CA	4.75% - 5.00%	4.25% - 4.50%	11%

Figure 2: Significant Life Science cap rate compression and rental growth. Source: Eastdil Secured, CBRE.

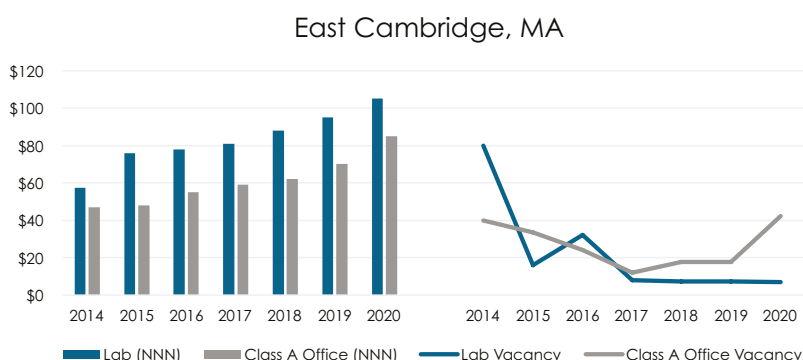


Figure 3: Office vs Lab rents and vacancy for East Cambridge, MA. Source: Eastdil Secured.

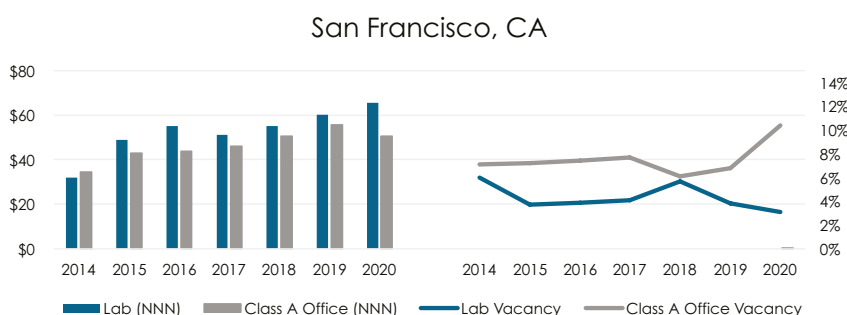


Figure 4: Office vs Lab rents and vacancy for San Francisco, CA. Source: Eastdil Secured.

To help identify opportunities within the developing UK sector, it is prudent to identify the fundamental driving forces that have caused these markets to perform as they have.

Using East Cambridge as the example, it boasts the presence of world leading universities such as Harvard and MIT as well as bountiful access to venture capital investment and government grants. This thriving ecosystem includes substantial clustering of science,

medical and engineering talent, multiple university teaching hospitals and the R&D hubs of many large corporates.

Having worked through the research, investors appear confident that the same ingredients for success exist in the UK as they do in the US. The Golden Triangle in the UK, for example, is home to world leading academic heritage in the form of the University of Oxford, the University of Cambridge and benefits from direct access to both Imperial and University College London. The Golden Triangle also boasts world leading research facilities such as the Francis Crick Institute – Europe’s biggest biomedical research facility under a single roof.

London is renowned as a world leading financial hub, and nearly all major pharmaceutical and technology corporations have established a presence in the capital. The UK government has also pledged record levels of funding towards R&D projects, with a targeted expenditure equivalent to 2.4% of GDP by 2027 and private VC is growing at a rapid rate through new University-linked vehicles such as Oxford Science Innovation.

Governmental impetus coupled with unprecedented levels of capital chasing Science and Innovation real estate exposure suggests that the UK market is well positioned to continue growing as a world-leading cluster for R&D.

“The UK market is still in its relative infancy. Given time, however, there is an argument to suggest that London will follow the same exciting growth trajectory as the leading US clusters in years to come” notes Peter Coates, Managing Director of Eastdil Secured’s London-based Science and Innovation team.

Recent highly competitive and aggressively bid processes suggest that global capital and their investment committees have bought into the thesis, digesting record pricing by underwriting similar fundamentals to those that the sector has experienced in America.

Oliver Woodside is an Associate with Eastdil Secured, a Real Estate Investment Bank at the forefront of the Science and Innovation Real Estate Sector in America, the UK and Europe. Eastdil Secured has advised on over £50 billion of Science and Innovation real estate transactions globally. Their recent track record includes advising on the \$14.6 billion recapitalisation of Biomed, the sale of Harwell Campus, White City Place, the Arlington Platform as well as the recapitalisation of MIND, Milan’s newest innovation district.

Developers and Landlords ought to be more flexible and provide diverse real estate solution to meet tenants' evolving needs.



Orestis Tzortoglou
Senior Director – Development
BioMed Realty

Flexibility and Adaptability in Real Estate

For decades, Cambridge has been at the forefront of many technology and life science advancements, leading the way in a number of specialized fields and establishing international significance. This continuous, organic growth has typically originated in local startups and spin outs, with accelerated growth leading to increased requirements for specialist real estate facilities.

Traditionally, these requirements have been met with the delivery of bespoke facilities that cater to the exact requirements of these businesses. However, in an ever-changing landscape, increased focus is placed on reversionary value and obsolescence and on the ability of real estate to adapt at a fast pace to cater to these evolving needs.

Delivering fully flexible and adaptable buildings is becoming increasingly important in meeting these needs, and requires developers to make decisions early on in the design stage that will stand the test of time over a much longer building life cycle. Benefiting from active ownership aides with informing

these decisions as access to data and 'lessons learned' over an expansive portfolio provide invaluable input during the design process.

Yet one size doesn't fit all. Businesses at different stages of their growth will have varying spatial needs. Developers and landlords need to become more flexible and offer the right real estate solution that meets requirements.

End-user priorities have evolved over time too. Whereas adequate car parking provision and connectivity featured high-up on the list not too long ago, sustainability and staff wellbeing are amongst the most sought after criteria these days.

Promoting truly sustainable initiatives in life science buildings can be challenging, not least due to the disproportionate energy requirements when compared to a conventional office building. Decarbonization of the built environment is inevitable and those who are able to champion efforts in this direction early on will gain an edge in what is becoming an ever more competitive environment.

Initiatives such as BREEAM and LEED accreditations are now well established and as technologies advance, developers and landlords continue looking at ways to improve their ratings on offer with 'Excellent' and 'Gold' respectively, often featuring on new developments. In addition, renewable technologies and advanced operating systems that increase occupational efficiencies help drive operating costs down providing a tangible benefit to end users.

Smart technologies are also introduced in new buildings helping further enhance the asset's performance and end user's experience whilst at the same time provide facilities' teams and owners with up to date/real time data and analysis on building systems. This in turn helps optimize performance and extend life span of critical equipment. Smart technologies can play a critical role in the sustainability field as well, by significantly reducing energy consumption through optimization of building systems such as heating/cooling and ventilation.

Wellbeing initiatives were promoted before the global pandemic but are now an expectation when looking for new premises. The WELL building standard provides an accreditation scheme that assesses the end user's experience in buildings. Features such as access to natural light and fresh or filtered air, healthy food on offer and mental health support programmes are some of the components that form part of the scheme. But wellbeing extends beyond the building itself where the immediate surroundings are becoming increasingly important and form part of the overall assessment of businesses looking for new premises.

Technology and Life Sciences companies tend to collocate in clusters inclusive of academic institutions of excellence, forming symbiotic eco-systems with dynamic inter-dependencies that fuel their success and growth over time. In areas of constrained land supply and protected zones due to historic buildings, these clusters tend to form in satellite locations from the town centre.

Science parks and campuses continue to provide the vast majority of new space supply and have become more than a collection of buildings and are often managed as holistic entities. Increasingly, they provide on-demand support of facilities and maintenance solutions to tenants, especially where such may not have the in-house capability to support such functions alongside high-quality amenity offerings ranging from gym and leisure centres, sports facilities and events, restaurants and conference facilities as well as daycare provision.

In what is becoming an increasingly competitive field not just locally but also cross-border, tenants focus ever more so in attracting and retaining the best talent. Offering a great place to work is therefore a critical component of this mission. As we emerge out of the global pandemic, this will become even more critical. Successful parks and campuses provide a compelling offering as they promote a strong sense of place. As more supply comes forward, those that are able to adapt and evolve to meet changing needs will ultimately benefit the most and establish themselves as the destination of choice amongst growing businesses.



BioMed Realty's Granta Park in Cambridge provides a Campus feel to tenants with on-site amenities including a state-of-the-art gym, restaurants, conference centre and daycare facilities.

Why London emerging as a key location for life science companies will strengthen the golden triangle



Tom Mellows
Head of UK Science at Savills in London



William Clarke
Director of Commercial Agency at Savills in Cambridge



A lot has been said recently about the UK's lack of laboratory space available, particularly in key hotspots such as London. While landlords are taking tentative steps into the life sciences sector, few are willing to make significant financial commitments on speculative buildings without knowing exactly where demand is coming from.

Unlike more established sectors, where you have the benefit of historic take-up and upcoming lease events, there remains a lack of intelligence when it comes to life sciences.

What, then, are the indicators of increasing demand that will help to encourage future development?

In the first instance, trends around increasing venture capital (VC) investment are very reassuring. In the first half of 2021 this totaled £853 million, a jump of 228 per cent when compared to the £260 million recorded for the first half of 2020, which was no doubt accelerated by the pandemic. Yet, when looking at more 'normal' times, the first half of 2021 was still 95 per cent higher than the same period in 2019, at £438 million.

It has already been proven that there is a direct link between a company raising capital and their subsequent real estate needs. For example, Autolus Therapeutics more than doubled the size of its space in White City from 15,000 sq ft to 32,000 sq ft at the point of raising £80 million in a Series C funding round in 2017.

This has helped to make life sciences one of the hottest asset classes, with investors predicting a rise in occupational demand as a result of growing VC volumes.

However, while it's important to appreciate that London is at the heart of some of the most exciting emerging fields of scientific discovery, actual leasing transactions have been limited when compared with other sectors. For this reason other metrics must be considered when looking at the pipeline of occupational demand.

University spinouts are another indicator of a potential uptick in requirements. For instance, Imperial College and UCL have helped to establish 76 successful life science and med-tech businesses in the last decade. Yet this is a relatively small number when compared to Oxford University who spin out around 20 companies per year, and even smaller when looking at MIT in the US. Despite this, the commercialisation of Intellectual Property is improving and will no doubt pay dividends as it continues to evolve.

There are also currently 439 London based companies that are seeking investment, 130 of whom are at a more advanced stage of funding. Although there tends to be a high attrition rate among start-ups in this sector, once they get beyond early stage seed funding, the failure rate drops significantly.

Consequently, the three main incubator buildings in London, the London BioScience Innovation Centre (LBIC) in King's Cross, Imperial's I-HUB in White City and Queen Mary BioEnterprises Innovation Centre (QMB) in Whitechapel, are all full and seeing increasing demand from early stage companies wanting to take more office and lab space.

Traditionally run by academia and government bodies, we are now seeing the first few commercial landlords considering providing incubator and larger grow-on labs for these businesses.

Big pharma is also taking more space in London to be closer to these emerging bio-tech firms. MSD, Novartis and AstraZeneca have all recently completed deals and it's likely that more may follow. This trend is something that has already been seen in more mature locations across the globe.

Ultimately, while we may lack the traditional metrics to track life science demand in London, there's no doubt that it is there and growing. The prospects for London are very exciting and its life science real estate market will be a very different place in five and even 10 years' time.



Cardiff Edge



Chris Walters
Head of UK Life Sciences - JLL



Justin Millett
Lead Director, Cardiff – JLL

Life Sciences are thriving. Globally, venture capital investment into the sector, a major factor driving company growth, crossed the \$100 billion (\$108 bn as of 27/09/2021) mark in Q3 of 2021. This staggering feat has broken all prior records with the Life Science companies now securing nearly three times the amount raised 5 years ago with only 9 months of the year gone. The US is still the dominant market accounting for over 60% of this investment but Europe is emerging, with the UK leading the way.

The UK market is home to over 5,400 companies – over double that of the next most populous country for Life Science companies – Germany. From a real estate standpoint, JLL has estimated up to £15 billion in investor capital has been



allocated to Life Sciences for 2021. This capital is needed to drive the growing demand for space seen in many of the dominant markets.

Within the UK, industry investors have been historically focused on the Golden Triangle (Oxford, London, Cambridge) due to the high presence of Life Science companies clustered around the world leading universities, which provide a steady source of talent and intellectual property. However, regional markets are coming to the foreground with their own selling points and strengths. Stevenage for example has become a focus of Cell and Gene Therapy research following the development of GSK's R&D Campus.

Likewise, similar interest has been demonstrated in the Cardiff Life Science market. The recent sale of Cardiff Edge, on which JLL's Cardiff office and dedicated UK Life Sciences team advised Garrison Barclay Estates, was a flagship deal in the regional market. Harrison Street and 'We Are Pioneer Group', the newly formed organisation between Trinity Investment Management and BioCity Group, added the 27 acre science and innovation park, to their growing Life Science portfolio, of nine regional parks.

Cardiff Edge is strategically located at junction 32 of the M4 Motorway, to the north of Cardiff City Centre, comprising 180,000 sq ft of laboratory and office space, which is 98% let and anchored by Cytiva, a medical and biopharmaceutical supplier that was acquired by Danaher Corporation from GE Life Sciences for c£14.6 billion in March 2020, and employs over 300 staff.

Regional markets are attracting these investments as they further grow and develop their own USPs. Cardiff is home to over 285 Life Science companies, of which more than 50% are in the medical technology subsector, employing over 5,500 people. The focus on the medical technology subsector stems from the University's research expertise, with a strong focus on biomedical research. The University has flagship research Institutes with strong academic output in Neuroscience and Mental Health, Systems Immunity, and Water and Sanitations research. This strong academic base provides access to talent and intellectual property and between 2010 and 2018, Cardiff accounted for 54% of Welsh start-ups in Life Sciences.

This activity and clustering effect seen in Cardiff is one of the key drivers for WAPG acquiring the site, with an immediate opportunity to build on the established park by delivering an additional 400,000 sq ft of commercial development to the market. Simon Hoad, Executive Director at WAPG commented "At WAPG we are experienced in delivering science ecosystems that enable businesses in the knowledge economy to thrive. The opportunity at Cardiff Edge is substantial. The strength and depth of the regions science sector is significant and, we look forward to working with the public and private sector investing in new labs and GMP manufacturing facilities, to support the rapid growth".

This regional acquisition in Cardiff is a leader that others across the UK are beginning to follow with established and new entrants vying for position in the space. The recent sale of York Biotech Campus, home to Abingdon Health, is a prime example of this, where LXI REIT included the campus in their £80 million acquisition of three sites.

This confidence in the Life Science industry is great for future growth. The past 12-18 months has been a testament to the resilience of the industry following the COVID-19 pandemic. Life Sciences has hit the ground running, with record levels of venture capital investment being seen that is driving company growth and demand for real estate space. Coupled with the increased focus from the UK government on the Life Sciences sector earlier this year; outlined by the Life Sciences Vision report and a planned increased investment in R&D, as well as the fact that only 10% of real estate capital directed at Life Sciences is yet to be deployed, the future is looking bright for the sector.

Specialist legal advisors on the future of the built environment

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ARCeleration

If Covid-19 was a storm, the life sciences sector has not only weathered it but is well on its way to curing it too.

Pre-Covid, yes, such days did exist, the life sciences sector was already flourishing, and the global pandemic has undoubtedly catapulted it into the national spotlight. During nearly two years of lockdowns and various restrictions, all eyes were pinned on the sector to provide the route back to 'normality'.

It did so in record time and the Cambridge-Oxford Arc has played a pivotal role with the deployment of the Oxford AstraZeneca vaccine. Oxford's life science experts also discovered through the large-scale Recovery trial, that dexamethasone could cut Covid-19 deaths by up to a third. The gradual return of our freedom is testament to the array of knowledge, skill and talent that permeates the sector and the Arc itself.

Life Sciences...the catalyst to real estate recovery

While more traditional asset classes, such as office and retail, have withstood the worst of the virus-ravaged economy, life sciences have emerged fairly unscathed.

Given that laboratory-based research and development professionals cannot work from home, the sector has been somewhat immune from the more probing questions surrounding viability as a future income stream; something that cannot be said for its counterparts.

It is forecast that 20m sq ft of commercial space will be needed in the Arc over the next 20 years to keep up with demand. Increasing investor appetite and a demand from occupiers that far outstrips supply, the sector is perfectly poised to take advantage of the future growth opportunities.

Nowhere is this more evident than in the continued acceleration of the Cambridge-Oxford Arc. Perhaps it's not surprising then that, even with lockdowns and extended restrictions on attending workplaces, investment in dedicated research premises remains strong.

Mapping the FutuRE

Mills & Reeve has recently launched Mapping the FutuRE, an interactive map giving a vision for the future of the real estate sector. With our broad experience working with clients across the sector, the team share views on trends evolving in a new and ever changing landscape.



Vincenzo Maggio
Partner at Mills & Reeve LLP

This innovative map offers insights and predictions on a wide range of topics affecting the real estate industry today and in the future. It can be navigated by asset type, including science parks. Find out more about the future of real estate by visiting www.mills-reeve.com.

Here at Mills & Reeve we've had the pleasure of being involved in much of this investment and development.

£500m life science district

Oxford North is a new £500 million life science district. Thomas White Oxford, the development company of Oxford University's St John's College, has been granted outline planning consent for its masterplan for a 64-acre life sciences district. William Donger, director of Thomas White Oxford said the decision "unlocks a bold vision to transform the area to build a global innovation district" and will "deliver positive socio-economic impacts." The district will eventually comprise 1 million sq ft of laboratories and workspace while also supporting the needs of local residents by providing 480 new homes and improving road infrastructure.

Dutch investment in The Science Quadrant

Another active participant in the market is Kadans Science Partner. Netherlands-based Kadans has an impressive portfolio of life sciences assets around Europe. It is the latest acquisition in the Oxford cluster – The Science Quadrant, Abingdon – and includes undeveloped land with planning permission for a further 20,000 sq ft of office and laboratory buildings. Kadans was recently acquired by AXA IM, underlining the strong institutional support for the sector.

Dedicated space to support University of Oxford life sciences spin outs

Building on their acquisition of the Science Quadrant, in Abingdon, Kadans Science Partner has expanded its growing European portfolio with the acquisition of the Sherard Building at Oxford Science Park. The building is wholly let to Oxford Sciences Innovation which is using the 28,000 sq ft of space to support early life sciences being spun out of the University of Oxford.

£46 million leasehold acquired on Melbourn Science Park

The acquisition of Melbourn Science Park by Bruntwood SciTech expands an already impressive portfolio into the "golden triangle" of London, Cambridge and Oxford. The transaction involves the acquisition of a long leasehold for £46.2m. Bruntwood SciTech will work closely with the local planning authority in the coming months to develop an ambitious masterplan for this 16.4-acre site, and work in partnership with science and tech innovation specialist TTP to provide additional support to occupants.

Bruntwood SciTech is a 50:50 joint venture between Bruntwood and Legal & General Capital. Current facilities include Cheshire's Alderley Park life science campus in Cheshire, alongside facilities in Manchester, Birmingham and Leeds.

£45m acquisition of 310 Cambridge Science Park just the start for Oxford Properties Group

Canada-based Oxford Properties Group has chosen the Arc as the location for its first European life sciences investment. The £45m off-market acquisition of 310 Cambridge Science Park, currently fully let to AstraZeneca, highlights the attraction of joining one of the most established life sciences campus in the UK. The property comprises 59,000 sq ft of fully fitted laboratory space and ancillary office accommodation, with around half fitted out as high specification wet labs.

Encouragingly, its ambition does not appear to stop there. With an intention to deploy £1.2bn into the European life sciences market by 2026, the Arc looks set to be a key beneficiary. Abby Shapiro, senior vice president and head of life sciences at the group commented: "Oxford's initial European focus will be on the UK, where we are actively seeking opportunities in the 'Golden Triangle'...given the relative low levels of existing supply, we will look to utilise our world-class development expertise to help provide the critically needed lab infrastructure".

Significant activity at Cambridge Science Park

We have also seen other significant activity at Cambridge Science Park at the start of 2021 with Brockton Capital being the successful bidder in a field of global institutional investors, including the likes of Aberdeen Standard Life, Blackstone, British Land, Kadans Science Partner and Oxford Properties on its acquisition from Legal & General for nearly £100m.

Planning application in on Cambridge International Technology Park

Another addition to the Cambridge scene sees a pair of adjacent sites acquired by Abstract Securities with plans for some 500,000 net sq ft of laboratory and office space. The total site amounts to 15.26 acres of development land situated next to the headquarters of technology powerhouse ARM.

The site, on a long lease from 700-year-old Peterhouse College, is now the subject of a planning application. Abstract hopes to see the first phase of development completed in summer 2023.

A great network, strong institutional backing and a long term vision

These developments highlight a number of the broader trends we are seeing in the science and technology parks investment space.

There is a growing national and international network of high-quality lab and office space with a focus on locations with established networks of universities, hospitals, support services and skilled talent.

This is supported by strong institutional backing and enthusiasm for the sector. Even more importantly, investors and developers have a long-term vision, with plans to expand existing facilities and offer supplementary support for new and growing businesses.

It has been exciting to see the range of ambition of investment in the sector in the Arc over this challenging period. The development and growth in knowledge intensive industries is accelerating rapidly and nowhere is this more evident than of the Cambridge-Oxford Arc.



Oxford-Cambridge Arc Investment Report



Patrick McMahon
Senior Partner, Bidwells

Scientists, technologists and entrepreneurs across the Oxford-Cambridge Arc helped innovate the UK through crisis last year. Without their rapid drug discovery and ground-breaking vaccination development of recent months, we would all still be locked up at home doing keep-fit in front of YouTube videos.

Instead, we're now embarking on one of the most ambitious economic growth projects we have seen since the London 2012 Olympics. At the end of next year, the government plans to implement a spatial framework for the region stretching from Oxford to Cambridge and encompassing 10 leading higher education facilities and some world-renowned science and technology research centres.

In simple real estate terms, this is truly a one-off opportunity. But the government knows it cannot deliver on its own, just as it did during the height of the pandemic. Investors, developers and local leaders must now take a lead from the Arc's true innovators and collaborate to fully harness the area's enduring appeal to create something truly special, investable, deliverable and suited to the much-changed world that we are about to live in. Where else in the UK is there the opportunity to do that?

The past 18 months have seen a step change in investor interest. Global funds and institutions are lining up to pour money into the Arc's high-performing city economies as the pandemic response shines a light on our world-renowned life sciences sector.

Bidwells' *Arc Investment Report*, published in June, revealed that total investment activity across the Arc reached almost £2.4bn in 2020, a record for the region and 56% ahead of 2019.

We now estimate that there is £5bn of global capital seeking a home in the Arc, and our latest occupational research shows that, across the Arc, office and lab take-up during the first half of this year was already at nearly two-thirds of the 2020 total.

These are mind-boggling numbers when you think of where we were in March last year. Rapid growth in venture capital investment in life sciences, AI, genetics and robotics continues to draw global talent to places such as Oxford, Cambridge and Milton Keynes – locations that already had reputations for strong and safe returns.

Long before the pandemic struck, the Arc had begun to mature into something much bigger than just Oxford and Cambridge, with clusters evolving across the region, and not just in life sciences, but in a whole stream of converging technologies and scientific breakthroughs. Oxford, Bicester, Milton Keynes, Bedford and Cambridge form a west-to-east spine across the Arc and what will become the East West Rail line.

With fast-changing working patterns and evolving shopping habits set to radically change the make-up of all places, not just new ones, this is a watershed moment to direct this post-pandemic investor interest into the right places, show progress on setting the framework for growth and get the large-scale projects imagined off the ground, in a way that really excites the industry and, crucially, the public.

There are ambitious environmental aspirations set for the Arc – a 20% biodiversity net gain obligation for any new development and a goal to increase Arc woodland cover from 7.4% to 19% by 2040. There are few who now doubt the importance of green infrastructure and the value of natural capital.

There is certainly no shortage of firm investor and developer interest in the Arc, but there is still some work to do to galvanise all the interested groups behind a single big idea. The events of both 2012 and 2020 prove to us that it is possible for the UK to deliver when it really counts.



West Midlands Snapshot



David Allen FRICS
Director
Holt Commercial

The West Midlands has generally been perceived as an area of automotive assembly and manufacturing, and, while it remains important and alive and kicking, both, in the assembly sector with investment by JLR and the supply chain, the rationalisation of that industry has left gaps. The Local Authorities and Development Agencies, and now the LEPs have all encouraged growth in the information and knowledge industries and specifically, in life sciences.

Rather than a complete overview, I have decided to concentrate on two specific areas, being, the growth of the medical and life sciences clusters within Birmingham and equally the digital creative sector in Warwickshire. This will

obviously exclude mentions of medical and life sciences in Warwickshire and indeed the creative and technical businesses in the Digbeth Quarter of Birmingham.

The medical cluster in Birmingham is probably most easily identified as being the Edgbaston Medical Quarter, which is a strong cluster of excellence and is home to approximately three quarters of the city's health care economy and comprises more than 180 medical organisations, 80 hospitals and specialist care centres and 23 training facilities.

Well known establishments such as the Queen Elizabeth Hospital Birmingham, the Centre for Rare Diseases and Personalised Medicines, the Institute of Translational Medicine, the Royal Centre for Defence Medicine, the NIHR Centre for Surgical Reconstruction and Microbiology and many more, are centred within the EMQ.

This has provided the impetus for a significant number of providers of other medical facilities within the specialist areas, such as oncology, orthopaedics, fertility, mental health and other specialisms. The traditional landowner Calthorpe Estate have developed the Edgbaston Medical Quarter and have been successful in the redevelopment of Pebble Mill, with a new private hospital, the relocated Dental Hospital and other facilities. In addition, a significant number of the medical facilities referred to above are now located there.

Very recently Binding Site expanded their presence from their existing facility on Calthorpe Road having been heavily involved in developing Covid-19 testing.

The latest facility to be developed close to the Queen Elizabeth Hospital and Birmingham University, is the Birmingham Health Innovation Campus. This is a 10-year master plan with over 650,000 sq.ft. of campus to be developed by Bruntwood SciTech in partnership with the University of Birmingham. The proposed number of new jobs is over 10,000, with an aim of £400 million of Gross Value Added to the regional economy by 2031.

The first phase of this is a 65,000 sq.ft. Precision Health Technologies Accelerator and Birmingham Precision Medical Centre with the Health Technologies Innovation Hub which will, in layman's terms, develop new medicines through cutting-edge molecular pathology and seek to bring these to market quickly and cost effectively.



So why does Birmingham continue to attract such development? Possibly because of the existing 17,300 people already employed in life sciences and its 15,000 life sciences graduates, as well as 550 companies already involved in the life science sector. Indeed, it is estimated that of the £94 billion regional economy, the life science industry has a regional turnover of £6.5 billion and has grown 40% since 2005. The latest arrival being Eurofins with a digital testing centre.

I realise that whilst concentrating on life sciences, I have ignored other technical clusters, of which, Enterprise Wharf close to Aston University have over 150 technical companies in a campus and cluster facility.

Moving across to Coventry and Warwickshire, the “Silicon Spa” is the largest games development cluster outside of greater London. It employs over 15% of the entire UK workforce in games development and 80 of the 130 games studios in the

West Midlands are within this area. Since January 2021, there have been four acquisitions of studios which are located in and around Leamington, which has resulted in over £2 billion of foreign investment into the UK. The Coventry and Warwickshire creative industries element contributed over £1 billion in GVA.

In addition, the UK Battery Industrialisation Centre has been developed since 2017 and is now a 200,000 sq.ft. commissioned facility, a “learning factory” for automotive batteries. This will assist the development of the Giga Factory, proposed for a site on Coventry Airport, about which there have been many headlines. The project is truly massive and will be a major component of the electrification of the UK automotive market.

So, with HS2 arriving, the Commonwealth Games 2022 in Birmingham and the Coventry City of Culture, all looks good for the West Midlands over the next two to three years.

No. 1 Birmingham Health Innovation Campus, with masterplan set to complete in 2031.



A year lost or a year gained?



Stephen Barter
Chairman, Wilton Capital Advisers
Gonville & Caius (1975-78)

Has the lockdown been a year lost or a year gained? For most, it's been a bit of both. For me, it's been a very productive time despite a much quieter social life and, for the first time in decades, no international travel. Our individual worlds became smaller, but we supercharged our technology skills and self-reliance, and most of us have radically re-thought our life-work balance.

Three things in particular have kept me busy –

- creating new liquidity and accessibility for property investment;
- promoting the more productive use of public land and its social impact, particularly in re-shaping towns and suburban centres; and
- supporting a new low-carbon energy source to mitigate climate change and to power our future.

On 14th May 2021, Mailbox REIT PLC became the first single property REIT, and the first company to be listed on the new International Property Stock Exchange (IP SX). Investors can now buy an equity share in a single, 'grown up' commercial property investment, which offers a direct participation in the property's rental income and capital value, but with the benefit of instant liquidity through a regulated exchange, like other listed shares, and without the burden of management. It's not often one helps to make a little piece of history.

I was involved in an earlier attempt to do this in the 1980s, when a group of us successfully lobbied the London Stock Exchange to allow single properties to be listed on the main market. Sadly, the 1987 stock market crash put paid to our plans. So it was immensely gratifying to be asked to Chair the first listed single property REIT some 35 years later.





Mailbox is an office-led, mixed-use building with 39 tenants (anchored by the BBC) and valued at £182m. At the time of writing, we have just paid our first quarterly dividend, equating to 7% per annum, exactly as projected in our listing document, and the shares are trading at a modest premium to the issue price. The property is professionally managed by M7 Real Estate and offers investors a strong asset management growth plan, with ESG at its heart. As its rental income increases in the coming years, so we expect to see the dividends and share price similarly increase.

A key application of IPSX is the ability to list partnerships and joint ventures. No longer will an investor in a JV be stuck at the mercy of his partner without a certain value or immediacy of exit. Now it is possible to list the whole partnership on IPSX, and for each partner to have flexibility in the scale of their holding, with instant liquidity and a continuously quoted value. This approach should be of immense benefit to the regeneration of town centres and other public-private partnerships.

The advent of IPSX also allows retail investors – moms and pops – to access the world of direct property investment for the first time. The potential here is huge – from local communities owning stakes in their towns or neighbourhoods, to greater portfolio diversification, to new property funds, and perhaps one day to tokenised real estate. Now that the Exchange is up and running, its applications become more likely.

My second busy area has been the better use of public land. In September 2021, HM Treasury gave the final go-ahead for Transport for London (TfL) to carve out a dedicated commercial development company, with ring-fenced management and access to its own capital, to deliver a ‘double bottom line’ of new homes for London and financial returns for TfL. This followed the Secretary of State for Transport’s announcement on 1st June 2021.

TfL has an amazing endowment of land, some 5,800 acres across the Capital, including London Underground Stations, bus stations, and an investment portfolio of residential, office and industrial buildings (with 700 arches and 80 car parks) valued at c.£1.7bn (March 2021). In many ways, the estate represents the value contour lines of London.

For some years, TfL has been developing with partners new homes for rent, for sale and affordable, with more than 10,000 units in the pipeline, of which more than 6,000 are already under construction or have planning permission, as well as new office and mixed-use developments. With greater independence and slicker procurement, the pace should become much quicker and more user-friendly. The new company should deliver some 50,000 new homes on the currently-owned estate within the next 25 years, alongside the more productive asset management of its existing commercial estate. By working in closer co-operation with adjacent landowners, public or private, it could deliver even more.

The resulting income and value growth from this liberated structure will create a major new endowment property company for London, akin to The Crown Estate or Grosvenor. Many of its buildings already offer accommodation to start-ups and local enterprises, alongside apprenticeship schemes and other inclusive, community-enhancing initiatives.

It's been a huge privilege to be involved in creating a new property company on this scale, at a time of such dramatic change in the aspirations of urban and suburban living and working. By using public land for public good through harnessing commercially-driven skills and creativity, I hope TfL can demonstrate that commercial return and social impact are not mutually exclusive, but can and should co-exist.

My third interest over the past year has been as a NED of the Government's UK Atomic Energy Authority (and Chair of its Property Sub-Committee). Once the UK Government's principal research laboratory for the development of nuclear power stations based on nuclear fission, now its focus is the creation of energy from nuclear fusion. Fusion creates a

limitless supply of safe, low-carbon electricity with relatively little radioactivity and nuclear waste. Its operating costs are relatively low, not least because the process re-cycles some of the heat it produces to create further energy. It will generate much of our electricity from the second half of this century.

The science of fusion has been known about for decades. The atoms are heated up, rather than split (as in fission), to a very high temperature so that the electrons fuse together and release up to 10 times the energy used to heat them. UKAEA has played a world-leading part in developing much of the technology needed to bring fusion into production at scale, (deriving many innovations in AI, robotics and materials science along the way). There is now solid proof of concept. The UK Government is currently shortlisting sites on which to build its first industrial scale fusion reactor by the late-2030s. When I think it's taken some 20 years to develop King's Cross, that's not very far away!

I'm no scientist, but it's been fascinating to witness the emergence of this important source of low-carbon electricity that will soon power our homes, cities - and before long aeroplanes - without reliance on fossil fuels.

As part of my NED role, I have been supporting the creation of two substantial technology campuses to house all these activities, at Culham (200 acres) and Harwell (700 acres) near Oxford. Brookfield is UKAEA's development partner at Harwell, which is increasingly attracting commercial occupiers alongside the major scientific experiments. It's a dynamic science 'cluster' for the UK, at one end of the Oxford-Cambridge Arc.

At the other end of that arc, I recently joined the Property Board of Cambridge University and Chair its Investment Committee. We are effectively creating a substantial new endowment investment portfolio for the University, with three distinctive elements:

- developing a new mixed-use neighbourhood at Eddington (c.3,000 new homes and more than 1m sqft of commercial and research space on 370 acres);
 - developing new academic and corporate facilities at West Cambridge (c.5.4m sqft on 165 acres when fully built, including an important new Innovation District); and
 - the gradual regeneration of various sites being released within the City Centre, following operational relocation to the new campuses.
- This strategy (financed by a mix of the University's own capital and through partnerships) will create revenue and value to help fund the University's future, as well as contributing to the sustainable growth of the Cambridge City region.

Whilst I'm delighted that my social life is now rapidly being restored, the past year or so has certainly not been wasted!



**Transport
for London**

Darwinist real estate



Jonathan Jay
Partner
ConduitRE

Generating strong performance, or alpha, in real estate, is a dogged search for a sector where occupier demand is growing faster than new supply. Traditional real estate sectors are crowded, with developers responding rapidly to new demand. This inevitably leads to plenty of new stock to satisfy demand, which chokes off rental growth.

Emerging sectors, stimulated by technological changes, can offer more lucrative opportunities. Previous examples include retail warehouses, which emerged due to the shopping preferences of car-borne consumers. Developers made hay, with the number of parks eventually rising to around 1,500 and becoming one of the largest components of the retail sector. Despite the supply response, rents rose ever higher through the late 1980s and into the 1990s, propelling funds with the highest allocation to the top of the fund performance rankings.

Purpose Built Student Accommodation (PBSA), providing high quality space to overseas and domestic students, has also tapped into a source of seemingly insatiable demand. The sector has risen from virtually nil, to a sector worth over £50bn.

Logistic warehouses are the latest sector to see a rapid expansion, as internet-based retailers build their distribution network to service orders made from the maximum number of sofas. Prologis Inc have been synonymous with this

growth, now with a market cap of around \$50bn. Technology and innovation can even change our understanding of what constitutes real assets. The largest US REIT, American Tower, owns and operates wireless communication infrastructure.

Previously it was entrepreneurial developers that identified these opportunities and delivered the stock. These visionaries used their market knowledge to identify emerging tenant demand.

Technology may now be able to spot new demand by what people are searching for on their smart phones. Machine Learning and Artificial Intelligence may even be able to design future buildings, identify the perfect locations and determine the optimal service level provision by sifting through the billions of data points circulating the web.

We have had algorithms in the past. Locating a warehouse is a function of drivetimes from ports, distribution hubs and household locations. Shopping centre locations were chosen using models of catchment spend and penetration. These algorithms seem almost quaint now, based on familiar data, some collected manually and relatively simple equations. Will real estate developers, investors and lenders adopt machine learning techniques called terms like random forests or LightGBM?

The culture change would be most acute in the banking sector, where relationship banking has dominated technical analysis. Will lenders be prepared to back an algorithm using game theory over a developer with a proven track record?

Identifying changing demand due to evolving technology can also signal the need to rotate the portfolio out of a sector. Retailer demand for identikit town centres has collapsed as consumer spending patterns shifted online. Many investors were seemingly slow to respond; would algorithms have raised the sell signal more quickly?

A big test will come in the coming months as investors evaluate office occupational requirements. It is not enough to produce coincident indicators, what investors and developers require are sufficiently forward-looking indicators to predict future demand. Big Data is so often immediate, whereas real estate can often be a long game. The focus on Science Parks following the pandemic is very topical, but how long will this demand last, how big will the sector get and how much supply will come on stream? These questions determine the risk of a sector. The risks of individual projects require even more data on cost and time over-runs and eventual letting rents. So often the historic data on these risk factors is privately held and stored out of reach of the data scientists.

Rapid changes in technology and advances in analysis techniques may very well come to bear on the analysis of real estate and it will also be reflected in real estate. A century ago, leases could be for over 100 years, now serviced space can be rented by the hour. Buildings will need to be flexible to service this rapidly changing demand.

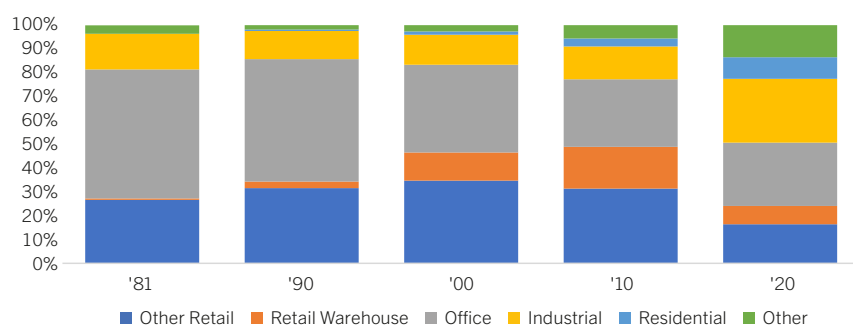


Chart: MSCI Annual Index sector weightings

Data-driven collaboration between investors and occupiers for sustainable real estate



Stefanie Price
Partner, Real Estate
Baker & McKenzie LLP

Sustainable real estate: many sustainable real estate solutions are technology-driven, with data generation invaluable to ensure a building's at optimum operational efficiency. But who has the right to that data, and how can it be shared effectively between landlords and tenants?

Buildings contribute around 40% of global carbon emissions. As awareness of the fragility of the environment is increasing, now, more than ever, building a sustainable future and creating long-term value matters. Real estate investors and occupiers can expect to be held to account by their stakeholders for specific details of how they are addressing sustainability issues in the built environment.

Defining sustainable commercial real estate

Many large real estate investors have expressed commitments to transition to net-zero real estate portfolios by 2050 or earlier, and generally to reducing the environmental impact of their properties.

Although there is no universal definition of "net-zero" in the real estate context, generally it is the practice of striving to be operationally carbon-neutral, by ensuring that the design, operation and occupation of buildings are as energy-efficient as possible.

This may be complemented by carbon offsetting, though with care to ensure that offsetting does not mask an otherwise inefficient portfolio.

Occupiers, too, are increasingly motivated to improve sustainability credentials in their real estate portfolios, often driven by wider corporate ESG commitments.

Sustainability issues affect investment values, lettability and voids and, therefore, go to the heart of a real estate investor's balance sheet.

From an occupier perspective, sustainability credentials are now a key differentiator: a sustainable building can deliver lower total occupancy costs and increased employee wellbeing and productivity. For occupiers, the sustainability of their corporate real estate has elevated to a board-level issue.

Digital transformation of the FRI lease

The traditional fully repairing and insuring (FRI), or triple-net, lease has limited compatibility with today's sustainability goals.

A single-let building, held under an FRI lease, will have building systems installed by the landlord, but with operational costs borne by the tenant. There is therefore little impetus embedded in the landlord-tenant relationship for a landlord to install energy-efficient systems.

The landlord may only plan to hold the building for five or ten years, selling it before those systems require refurbishment. However, two-thirds of today's buildings will still exist in 2050, and modernisation of these legacy systems will ultimately become necessary in order to deliver on sustainability commitments. Minimum energy efficiency standards incentivise some landlord improvements, but there is little cost incentive during the life of a single-let FRI lease.

A multi-let building can present further challenges. Here, a tenant will be responsible for a share of energy and operating costs, from operation of plant and machinery installed by the landlord, via a service charge and under service contracts negotiated by or on behalf of the landlord. There is no common incentive to install and operate energy- and cost-efficient equipment. There may also be limited incentive on a tenant of part to adopt energy-efficient practices when service costs are based on a fixed proportion of the total cost incurred.

Energy-inefficient practices are often embedded in leases, for example specifying the hours that air-conditioning will be available. As users move towards more flexible working practices, this becomes increasingly anachronistic.

Green leases clauses can go some way to embed co-operation on sustainability in the fabric of a lease. However, following negotiation, agreed form green lease clauses are often no more than "light green". The Model Commercial Lease includes sustainability provisions to facilitate discussion between the lease parties. These include confirmation that both landlord and tenant want to promote and improve the environmental performance of the premises, and an agreement to share environmental performance data relating to the premises on a regular basis (which of course assumes a capacity to gather, record and log such data in any useful way). The Better Buildings Partnership's Green Lease Toolkit includes more detailed sustainability provisions.

Some landlords with net-zero ambitions are going further and requiring tenants to enter into "occupier support agreements". A tenant might agree to appoint specific points of contact to collaborate on minimising energy consumption and carbon emissions at the property, and to allow the landlord access to energy, emissions, occupancy, and even occupational satisfaction, data. However, the obligations in such agreements do not generally have the same binding force as lease covenants, as they sit outside the lease. If a tenant does not comply with its obligations, the landlord has minimal recourse to compel a tenant to behave differently.

Who generates or has rights to the data, and who needs the data?

Commercial properties are data-rich environments. Think of all the information being generated on a day-to-day basis. How warm was the building overnight? When did the HVAC power up? How much time and energy did it need to cool the building? Who has arrived, and what time did they come? When did the lights switch on? Did they need to, or was it already light enough outside? Where were users concentrated within the building? Were they comfortable? When did users leave? Did this correspond with the HVAC schedule?

This data provides a granular picture of how sustainable a building actually is and, once compiled, enables the owner or its advisers to extrapolate how sustainable a property portfolio is. It enables the operation of a building to be tailored more

accurately to actual use, which can result in a significant decrease in energy consumption.

Some of this data is readily available, but arguably to the wrong party. Tenants have access to energy consumption data, but generally no obligation to divulge this to their landlord. Even if a landlord obtained this operational information, it is often not shared with a purchaser of that asset as part of the buyer's standard due diligence. If it is shared, it may be paper-based or copy-typed, or not in a standardised format.

Conversely, some data is available but data privacy concerns mean that occupiers do not collect it; or if they do, they do not share it. Personal data cannot be shared without a lawful basis for doing so. Consent is one such basis, but it must be freely given and can be withdrawn, so has its risks.

Fortunately, much of the data that would be of interest to landlords will be aggregated data and capable of anonymisation. If properly anonymised, data protection laws do not generally apply, so privacy concerns are substantially decreased. However, care must be taken to ensure that the data is properly anonymised, and cannot either be de-anonymised or used in conjunction with other data in the landlord's possession to identify data subjects, otherwise data protection laws will still apply.

Regrettably, the majority of commercial properties are not smart buildings equipped with IoT sensors to gather the full wealth of data that is available. In a recent JLL survey, nearly 75% of real estate investors said that they need to measure and report sustainability data, but have limited capability to do so.

Is regulation key?

Some legislation and regulation may compel co-operation between owners and occupiers and encourage a shared focus on sustainability commitments. Nevertheless, there is not always a common goal, and current measures of ESG in real estate do not necessarily interrogate the right data.

EPCs are a common measure of a building's energy efficiency in the UK. The Government is currently consulting on proposals to raise the minimum EPC requirement for buying or letting commercial premises to a B by 2030. However, the Better Buildings Partnership has identified that there is no correlation between a commercial asset's EPC rating and its operational energy consumption.

A sustainable, data-driven future for real estate

The IPCC's Sixth Assessment Report, published in August 2021, states that climate change is "widespread, rapid and intensifying". Moreover, for the first time, the IPCC notes that "it is unequivocal that human influence has warmed the atmosphere, ocean and land".

As buildings remain a key contributor to global carbon emissions, it is increasingly urgent for both investors and occupiers to substantiate their sustainability credentials. The landlord and tenant relationship needs to evolve and embrace shared sustainability concerns, and better use needs to be made of the wealth of data generated by commercial real estate. This is not just a board-level issue - it's a planet-level issue.

“Let’s go invent tomorrow instead of worrying about what happened yesterday” - *Steve Jobs*



Stacy Gross
Head of Research, APAM

After c. 16 months of working remotely, we were keen to highlight the advantages of office working whilst remaining a hybrid office to allow for flexible working.

Georgia Duncan-Gill,
APAM Operations Manager

It is often thought that innovation is born out of uncertainty, and the past year’s pandemic has provided us with an abundance of uncertainty! At APAM we have kept a positive perspective over the last 18 months or so whilst we grew our business and employed an additional 16 members of the team. We also took the opportunity to review, strategise and innovate our business operational model. Embedded in this constant focus on the future rather than the past, we have begun to embrace the opportunities provided by innovative Proptech and identified key themes and trends that will enhance our data management, asset management and core processes within our client reporting needs. Proptech is a key component of our business model, and the pandemic has given us fresh legs in this so-called marathon of technology.

Do not worry, we are not about to ‘ditch’ our traditional office working model! As at the core, innovative solutions start by people coming together, sitting side by side to discuss a common need and produce ideas and solutions to improve efficiency. We recognise the importance of having a common, creative space to help facilitate these discussions. So, while many bunkered down over the pandemic and questioned the future of offices, our team scoured the market looking for a new office to house our growing London team. After a fantastic effort from our management and operations crew, we moved into our new London office in July 2021, at 84 Grosvenor Street in Mayfair.

Our office is a refurbished, Grade A space that provides many comforts of homeworking with the benefits of a modern office suite. We have implemented a hot desk system to encourage a more adaptive working environment and promote cross-team interactions. This also allows us to apply social distancing measures to ensure a safe environment against Covid-19. The space includes larger break-out areas and lounges, styled meeting rooms and zoom rooms. It also comes stocked with a celebratory drink area – celebrating those achievements that are worth celebrating, together as a team.

To provide our clients with the level of service they have grown to expect from APAM, we not only need a common space to help drive innovation, but also the technological tools to execute. There is a real threat across the industry of utilising legacy solutions to solve modern problems. Technology can provide us with the ability to streamline processes, reduce costs and navigate through large data sets to abstract key information to make better business decisions. The pandemic has heightened awareness of the necessity for, and accelerated the inclusion of, technology into property markets.

There are plenty of Proptech examples that are beginning to be imbedded within the industry, such as digitalisation, smart contracts, fractional ownership and smart spaces. One that has been centre stage globally over the pandemic lies within the understanding of cryptocurrencies. The most well-known, Bitcoin, has exploded over the year, rising +800% over the pandemic reaching a top price near \$60,000 (although it has since lost nearly half that value!). With the rise of fame, Bitcoin – or rather the blockchain mathematics behind it - gained increased interest from academics, businesses and entrepreneurs.

“Every informed person needs to know about Bitcoin because it might be one of the world’s most important developments.” – Leon Luow, Nobel Peace Prize nominee

Bitcoin is viewed by many as just the beginning of the vast potential and utilisation of blockchain technology. Blockchain can provide the real estate sector with a powerful tool that can redefine traditional processes and provide smarter and faster solutions than traditional server-based databases. In its simplest terms, blockchain acts as a digital, decentralised ledger which can fundamentally replace historic paper trails of information. This framework provides the technology to, for example, streamline property transactions and deal settlements within a secure and transparent space. The cost-benefit of the technology is compelling. But this is not the only application – smart contract technology is also emerging where a blockchain could manage electronic loan agreements, reducing reporting requirements and time lags. The technological capabilities allow for the monitoring of a deal's specific loan terms and conditions, notifying parties instantly if any loan covenant triggers are breached.

We have heard a lot about blockchain over the last few years, but alternative technology under the wider Distributed Ledger Technology (or DLT) umbrella also exist – such as IOTA Tangle and Hashgraph. While these do not get the same fanfare as blockchain, they can often perform the same functions but with added benefits of faster speeds, less energy consumption and increased security. It is important to note that these alternative technologies come with a host of teething problems and importantly regulatory compliance issues, but the 'genie' is now out of the 'lamp' and there is a technology solution catered towards many types of demands and regulatory needs, and the end benefits remain high.

Growing industry buzzwords such as digital asset marketplaces are also a great example of the use of new technologies. By using cloud-based advanced technologies, digital marketplaces provide a trading platform for retail traders to invest in illiquid assets such as fine art and real estate. These marketplaces create opportunities and benefits for both investors and asset owners. A good example is the emerging trading platform Mintus, the first alternative real asset marketplace in the UK and Europe. Mintus have developed their own proprietary cutting-edge technology to facilitate fractional ownership of prime commercial real estate. Their platform is considered highly agile, fully scalable, and features state-of-the-art security protocols. APAM founder Simon Cooke has joined their advisory board and is Chairman of their CRE investment committee.

Another example is PUPIL, who have developed technology to accurately measure, record and log property data digitising buildings. The pandemic forced the industry to adopt 'virtual' viewings and deliver 'virtual' marketing campaigns for our vacant buildings. The industry is professionalising the way

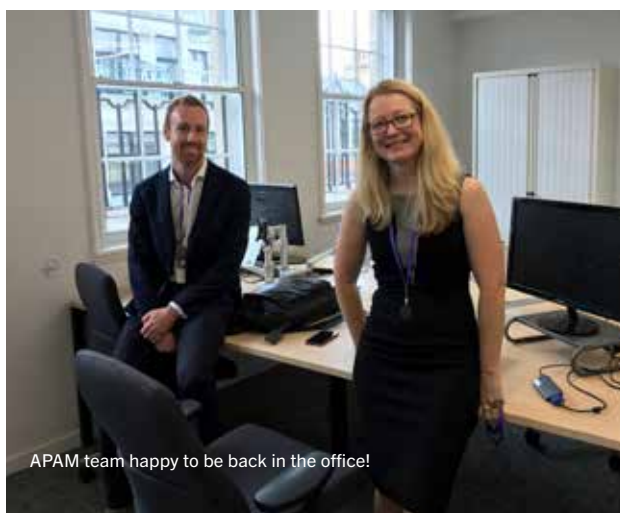
we 'reference' real estate, and no longer will the 'back of the envelope' calculations of yesteryear stand up to scrutiny. Other examples include OnSiteIQ, which provides a platform for digitising and mapping construction sites, while Briq delivers a predictive analytics tool designed to test out the impact of changing variables in a construction project. Others such as Blyng aim to disrupt the property agency world by delivering instant accurate and personalised interactions with customers across multiple contact channels. The role of the traditional sales or leasing broker will become increasingly 'automated' as the technology is adopted, and the ludicrously out-of-date fee basis for broker and leasing services will be modernised to be aligned with the economic outcome of the transaction.

There is no doubt that the pandemic accelerated the use of technology within the real estate sector. These powerful tools have the capability of providing enhancements throughout the property industry, and you get the sense that the sector is beginning to embrace change having been a traditional 'late adopter' in comparison to the broader financial services world.

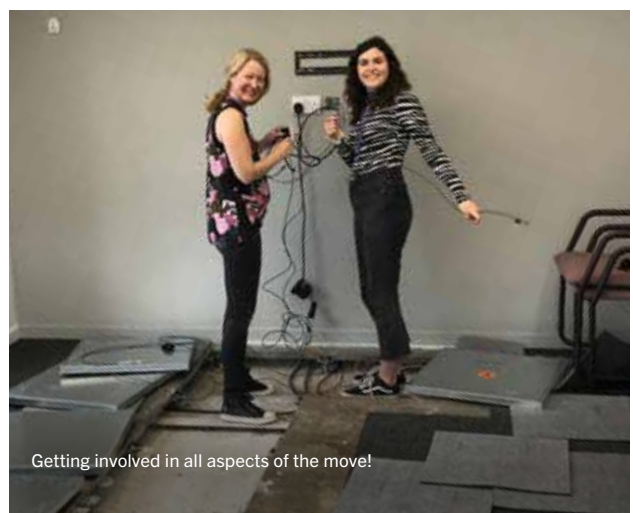
Data and data analysis are now critical components of cashflow modelling and forecasting business plans. APAM have focused on data management and 'harvest' vast amounts of occupier data through our day-to-day asset management of £2B of UK assets. Real time information is generated with each interaction with each of our 1,000 tenants. Each piece of information is analysed to create datasets to ensure that future business plans are robust and are embedded in real information rather than the traditional 'anecdotal' information of the real estate industry.

Continuous technology advances make it difficult to keep ahead of the curve. But we believe that combining smart asset management with vigorous data management technologies will ensure that we make better informed decisions for our investors. As real estate embraces tenant demand for more flexibility and the industry scrambles to meet ESG requirements, the use of raw data to ensure we are making informed decisions whilst maintaining efficiency will be critical to our future successes.

The past year has confirmed our belief in the importance of collaboration and for our team to be together under one roof in an environment that generates ideas and innovation. We embrace the challenges and opportunities that the technology 'marathon' brings. We would like to take this opportunity to open our (new office!) door and extend this discussion to other members of our community and anybody who has an innovative product or system that will create efficiency and accuracy in the future. We, at APAM, always have an open door for great ideas!



APAM team happy to be back in the office!



Getting involved in all aspects of the move!



Boundless Collaboration



Geoff Southern
Associate Director
IBI GROUP

In a time where boundaries are ever-shifting [office/home, physical/virtual, open/closed], our knowledge industries might provide lessons for a more sustainable way of being together.

Brexit... remember that. The context of 'other things' has distracted us recently from observing the various ways in which our conscious uncoupling from certain aspects of Europe is impacting on our lives; the ways in which our relationship(s) with our ex-partners will re-establish themselves; how happy we will be alone.

However, as politics firms up its borders, the scientific community is becoming ever more connected.

This is shown in its attitude to real estate, with institutions acting collectively and/or cooperatively to position themselves well in the competitive RE market, and is then made manifest in the way this real estate is designed and developed, where we

- create **clusters** and **hubs**; which allow quick information flow and dialogue,
- position **outposts** and **beacons**; which attract and highlight local expertise and networks
- gather data from **sensors**; whether in-person or digital

There are many exemplary design projects in the higher education and advanced collaborative research sector, and although each is located in different geographical and intellectual spaces, we have seen them united by significant investment in 'place' to support social, health & environmental challenges facing the UK economy. These projects embed collaboration, innovation and aspiration at the heart of their design; a unifying and fundamental element of the brief received from each organisation.

It is at this point that I (tentatively to the CULS readership) mention 'the other place'. The name has been in the news almost continuously since the Oxford/AstraZeneca vaccine was entered into the race, and this just shows the exposure that can be derived from the intellectual capital which was invested.



In Oxford, on the Harwell Science & Innovation Campus (a **cluster**), we have supported the Rosalind Franklin Institute (The Franklin) who have similarly huge potential to advance and impact lives around the world. The Franklin is a new national institute dedicated to transforming life science through the development of new treatments, disruptive technologies in physical and engineering sciences, and wider interdisciplinary research.

Cambridge biochemist Professor Sir Thomas Blundell and his team's involvement in The Franklin has already strengthened their ties with other research teams around the country. For example, his group has been working with Professor Frank von Delft from the University of Oxford and leader of the XChem facility on the Harwell Campus, as part of a drug design project being developed in collaboration with The Franklin.

The teams at the Franklin will also address a clinical need which is growing faster than ever in the context of escalating healthcare costs, an ageing population, and growing impacts of mental illness & dementia. This is alongside increasing the speed and reducing the expense of creating these new ground-breaking drug therapies.

The building is a **hub**, where world leading technology hosted within the Franklin is complemented by the innovative design of the building itself. Conceived as a 'spoke and hub' arrangement, the building is designed to foster those unique collaborations and knowledge exchange between academic research groups. With one entire floor focussed on social interaction, discussion, as well as providing quiet spaces for writing-up research, and the other three floors house state-of-the-art imaging equipment, next-generation chemistry laboratories and four isolated electromagnetically stable electron microscope suites, the Franklin is now uniquely placed in its experimental capabilities, living up to the lineage of ground-breaking discovery in life sciences.

'The collaborative structure allows the RFI (Rosalind Franklin Institute) to make the most of interactions and draw on a wide range of existing research excellence from across the UK.'

Professor Ian Walmsley, Pro-Vice Chancellor at the University of Oxford





Also ground-breaking (but with both meanings), Aberystwyth Innovation and Enterprise Campus (AIEC) provides cutting-edge facilities for collaborative world-class research, innovation and technology transfer in key UK sectors including biotechnology, agri-tech, and food & drink. Located at Aberystwyth University's Gogerddan Campus, it is supported by the University, Welsh Government and UKRI.

One of the key items to note here though is that twenty-two firms have located within twelve months of the Campus' completion, including several firms attracted to expand (**outposts**) from other leading UK science parks and institutions. One example of the many companies who have co-located there since practical completion is a Cambridge-based tech company Agxio (included in Business Worldwide Magazine's list of '20 Most Innovative Companies to Watch'), who clearly see benefits in expanding their location to Aberystwyth. The campus is focused on innovation in food / agri-tech and the Welsh location is clearly a pull as much as their base in the Cambridge 'Silicon Fen'.

The campus design was driven by the principal aim of encouraging collaboration wherever possible. The AIEC offers a series of spaces ranging from informal spaces to adaptable meeting rooms and high-tech laboratory space where teams of people from different research backgrounds are brought together to problem-solve. It serves as a collaborative epicentre between numerous in-house scientists and external parties committed to innovation, and provides a unique base for research in response to global challenges such as food security, bio-energy, sustainability, and the impacts of climate change. The campus focuses upon development, prototyping and testing of new products and processes. For the first time in mid-Wales, state of the art facilities and equipment are available for universities and companies to accelerate innovation and joint R&D collaborations.

We brought five bio-science and agri-tech user groups together in three connected buildings whose research facilities in bio-refining and seed bio-banks further support campus commercialisation to meet the challenges of climate change, through identifying resilient crop varieties and clean industrial products produced from biowastes. These commercial developments are all interlinked, architecturally bound by a common aesthetic of solid massing referencing both farming and manufacturing structures. A BREEM 'Excellent' scheme, it will support job creation and provide an important boost to the Welsh economy, and in particular the rural economy of mid and west Wales, and will play an important role in protecting food, water and energy security now and in the future.

In order to support these organisations, focus in Higher Education is on producing the scientists of the future, with projects such as the University of Liverpool's Digital Innovation Factory, and Sensor City (for which it collaborated with Liverpool John Moores University) highlighting the importance of moving in tandem.



'As a national facility, the Franklin will be able to buy the big pieces of kit that universities by themselves cannot afford and develop great tools for basic research.'

**Professor Chris Abell,
Pro-Vice Chancellor for
Research at the University
of Cambridge**

The Digital Innovation Factory (DIF) will be a hub for academia, research and business for the advancement of virtual engineering and robotics, bringing together complementary areas of Computer Science and Engineering Technology. The DIF will provide not only state-of-the-art facilities for the Virtual Engineering Centre (VEC), but also support and reinforce relationships with business (in this case the Northwest aerospace sector and wider industry), by providing a focal point for leading and emergent virtual engineering technology, research and expertise. The Factory will become a 'Centre of Excellence' in simulation and virtual reality, through the creation of four dedicated autonomous laboratories, including drone and robotic labs. These spaces will enable students to put their theories into practice and test in real world environments.

Sensor City is a purpose-built, hi-tech, sensor-systems business incubator that has the potential to create 1,000 jobs and house 300 new businesses over the next decade. Supporting the wider Liverpool redevelopment plan, the building is strategically planned to encourage investment from key industry partners focused on engineering and innovation, such as Rolls-Royce, and therefore also act as a catalyst to local economic growth.

Both of these examples extend collaboration into the education setting, recognising the value and reinforcing the message that collaboration is becoming ever more boundless and boundaryless.



Developing “data consciousness” in the real estate sector

The real estate sector is at a point of inflection, with technology starting to shift not just what can be done in the built environment, but also what we expect from the places where we live, work and spend our leisure time.

For digital technology, data is often both a raw material and a key output. Digital platform-based business models, particularly in the tech sector, have shown how that dual characteristic can be harnessed to drive virtuous circles of data-driven, tech-based digital services. But how many real estate businesses understand what data they have and what they could do with it? The sector is starting to understand that developing organisational “data consciousness” is a strategic skill.

Of course, change will take time, particularly in this sector. Leases typically have long spans with limited opportunities to revise the terms. Older leases probably make no reference to data, and newer ones may only deal with data protection requirements around personal data. By contrast, some tenants, particularly those that have harnessed data for their own business models, may come to the table with sophisticated expectations around the data generated by the leased premises. If they are to come to the table on equal terms, landlords need to have developed their own data strategy and negotiating red lines. The current reality is often that any data provisions in early drafts of leases are dropped in favour of points seen as being of greater priority. But change is happening and not from the growing prop tech sector – it was recently reported, for example, that Landsec has appointed a data and analytics specialist as a Non-Executive Board member.

We are certainly seeing investor and Build to Rent (BTR) clients becoming much more aware of the data being generated from their estate. BTR tenants (including student accommodation and senior living) increasingly expect services that add value to the lease of their flat or rooms, whether in the form of concierge services, digital keys and security, apps to book services, wellbeing and healthcare support, and so on. Correspondingly, investors are starting to explore what insights they might derive from securing access to these data flows.

Data about how premises are actually used can be enlightening and can cut through the layers of intermediaries between an investor and the people who actually use the premises. Evidence that a particular part of the floorplate is not much used could prompt an offer to support reconfiguring it, which could in turn dissuade a tenant from exercising a break clause and finding more suitable premises. Data about shoppers’ activity in retail estate can help to illuminate where people spend time, where they spend money, etc which can then feed into future design decisions, and might also be used as evidence to reinforce rent levels. Data can also be used to monitor conditions in a space. For example, smart heating controls in tenanted premises that collect data on moisture levels can give early warning of potential issues with damp or heating. These can then be addressed through routine maintenance in good time before the structure of the building is damaged and avoiding the cost and disruption of an emergency call-out for, for example, a broken boiler.

The choice of how data might be put to work can be overwhelming, particularly faced with huge quantities of unstructured data. The most effective approach may be to identify data that can help to deliver clearly defined outcomes in line with wider strategy, such as predictions for future customer/tenant needs, or understanding competitive trends in the market. Alternatively, the focus could be on data that feeds into measuring a key performance indicator, or a sustainability metric, or enabling a clearer understanding of return on capital or other aspect of performance etc.



Anastasia Gorokhova
Partner
Osborne Clarke LLP

From the lawyer’s perspective, tools such as legal matter management platforms can play an important part in growing an organisation’s “data consciousness” and supporting data-driven decision-making. For example, it is not difficult to find key terms and metrics for a particular unit or plot. But seeing the picture across a large estate or a diverse portfolio can be cumbersome if the documentation is managed in traditional ways. If everything is held digitally on a central platform, by contrast, it becomes simple. A period with a particularly high number of renewals or break clauses can be spotted in good time to consider whether additional capacity will be needed to manage the increased workload. A team might stand out across the portfolio as consistently closing deals quickly – what best practice ideas can be learned from their approach and shared across the business? The platform can be used to monitor new business – changes to key terms can be flagged up and reviewed, and negotiating parameters can be set to increase clarity over when the legal team needs to be consulted over changes to a key provision. Clients regularly tell us that the overarching umbrella metrics that they derive from such platforms are an unexpected bonus and can be very powerful in both driving efficiency and managing risk.



At a granular level, the first step in putting data to work is developing an understanding what the business holds, what it has access to, and what it could additionally collect, access or acquire. The second step is to understand what could be done with that data. A key aspect of this is undertaking due diligence on the matrix of legal rights and obligations that sits around each dataset. Understanding that matrix is an essential aspect of laying the foundations for data-driven business models, and the area that need to be explored are: **(1)** Is the data subject to regulation? **(2)** Is the data subject to intellectual property constraints? **(3)** Is the data subject to contractual rights and obligations? The follow-up to that analysis will be to consider whether any additional steps could be taken to enhance the protections around valuable data. This is not just a question of operational information security, but there might be additional intellectual property protections that could be secured. The interface of data and intellectual property can be tricky – pure information is not protected – but it can reinforce or enhance the value of a dataset if such protections can be established.

Understanding what data *is* available flows into a consideration of what *isn't*, and how it might be obtained. From that point, a data-centric commercial strategy can be shaped which then feeds into negotiations around the terms and conditions of new business and leasehold grants, with a new understanding of the importance of such terms and impact of changes.

As a lawyer supporting real estate clients, my team is also seeking to develop our “data consciousness”. Detailed technical understanding in property law is of course a cornerstone but we’re finding that it is increasingly important to have an awareness of data issues and the ability to spot when it would be worth bringing an IT and Data specialist colleague into the discussion to deliver value for our clients. Our IT and Data colleagues, meanwhile, are developing a depth of understanding of the real estate sector. It will be fascinating to see how the fundamentals of this sector – large scale investments, complex chains of ownership, a focus on the physical – shift in the new few years. As we noted in our recent joint report with Nuveen Real Estate on the **New Age of Data in Real Estate**, “*The huge promise of data-driven transformation is not realised without a considerable amount of effort. . . . But data is the starting point.*”

The datafication of the real estate industry

There has never been any doubt that the property industry values information. The great challenge of the last two decades has been to agglomerate that data and make it widely available.

In the Proptech 2020 report, Baum, Saull and Braesmann quote Jane Jacobs' observation that to fully understand cities there is a requirement to "*reason from the particular to the general, rather than the reverse, to seek 'unaverage' clues involving very small quantities, which reveal the way larger and more 'average' quantities are operating*". The same principle applies today but we have many more tools to collect, aggregate and analyse data. The more data that is shared, the greater the transparency in all property decision-making. Better property decisions for investors, for consumers and for wider social impact result.

Historically the 'big agents' held sway simply by having done, and recorded, more deals, over a long period of time. Card indexes of property deals were inherited by each new incumbent of a broker's seat. They knew how big each property was, who owned or rented it, what they had paid or were paying, when the rent reviews were due, or the leases expired. And they were reluctant to relinquish that position.

The property sector, particularly in the early days of the Fourth Industrial Revolution, was often criticised for being slow to adopt technology. This persists, with a recent article on Unissu – the procurement platform for proptech – suggesting that real estate advisors: 'have been resisting Proptech-driven innovations designed to intentionally disrupt their work with the aim of making the real estate industry more efficient and transparent'. Fair or not, it is a commonly held view amongst Proptech businesses.

Early initiatives to pool information came from the 'small guys' supported by the commercial investors. Investment Property Databank (IPD), was one of the earliest commercial real estate data agglomerators in the 1980s, and is now absorbed into real estate data leviathan MSCI.

Compared to the UK commercial real estate market, data in the UK residential for sale sector was opened up relatively quickly.

Rightmove, created in 2000 by four national estate agency networks, gave prospective purchasers' access to information on properties on the market and benefitting from first mover advantage and the network effort, achieved an almost 90% market share. Zoopla followed in 2007. Both portals though, restrict access to their data, and seek to monetise it. Hometrack, owned by Zoopla, is the largest automated valuation model provider in the residential sector. In a sign of what the future will hold, the role of valuers in residential portfolio valuation has been fundamentally disintermediated.

The game changer in this market came from Government. Once HM Land Registry made public its property transaction data, the 'Price Paid Dataset', in 2012, neither the residential agents, nor the portals, were the gatekeepers of local market knowledge. By the end of 2013 it had released the entire historic record dating back to 1995, providing the price of every residential



Sandra Jones
MD
Dataloft, a leading residential data analytics company



Chris Brown
Non-exec chair
Dataloft

sale transaction. There was no longer any mystique about prices achieved although access to individual records remains clunky.

The open data approach is progressing across the built environment sector.

In 2017 the Conservative Party manifesto pledged to 'use digital technology to release massive value from our land that currently is simply not realised, introducing greater specialisation in the property development industry and far greater transparency for buyers. To make this happen, we will combine the relevant parts of HM Land Registry, Ordnance Survey, the Valuation Office Agency, the Hydrographic Office and Geological Survey to create a comprehensive geospatial data body within government, the largest repository of open land data in the world. This new body will set the standards to digitise the planning process and help create the most comprehensive digital map of Britain to date.'

Digitisation of the planning system was included in the Planning White Paper last year and is anticipated to be included in the forthcoming Planning Bill.



This journey towards digitisation continues at variable speeds in different sectors.

For example, in the residential rental market there is still no all-encompassing equivalent of price paid transaction data. HMRC holds rental data but is not permitted, under data security protection, to share it with other government departments, never mind the market. Yet the enormous influx of investment capital entering the UK residential rental market needs evidence to support its decisions.

The nearest equivalent to the price paid dataset in the rental sector is held by tenant referencing companies, who capture details of rents paid and tenant demographics. This is a fragmented market, with a number of tenant referencing companies each holding part of the picture. There has been some recent consolidation in the sector as Barbon, the parent company of Homelet, acquired two of its rivals recently and Rightmove bought Van Mildert in 2019. Dataloft has become the aggregator for rental information, taking monthly feeds of rent paid and tenant demographic data from multiple tenant referencing companies and pooling it in a single central dataset.

Similarly, in commercial real estate MSCI is well-established as the industry standard for investment metrics based on data pooled by contributing institutions, while CoStar and

EGi collate transaction information from third party sources – but neither can claim full coverage and well-funded users tend to subscribe to both. None of these can claim to be comprehensive.

There is also a big gap in construction cost data which is still limited to the long established (1961), RICS run, BCIS database and the fragmented data held by the larger cost consultants and contractors.

Data in relation to construction materials is gradually being transformed through Environmental Product Declarations (EPDs) though this will take some time to become comprehensive and current despite the urgent need for it to help address the Climate Emergency.

And big gaps exist in real estate energy use data although Government holds an, as yet, unpublished database of meter readings (the National Energy Efficiency Data-Framework (NEED)) that could easily be reformed in the same way that Open Banking data has been.

The regulatory dance between Government and the large data companies looks set to continue as the journey to modernise real estate information in the UK wends its way slowly across the sector.

Digital Planning: beyond the rhetoric



Dr Sue Chadwick
Strategic Planning Advisor
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In August 2020 the planning white paper announced that it was “time for the planning system finally to move towards a modernised, open data approach... harnessing the benefits which digitisation can bring”. My year as a Research Fellow at the Open Data Institute has given me some valuable insights into what digital planning might mean in practice; here are my thoughts.

Digital Planning: definitions, impacts and benefits

The planning white paper promised a future planning system based on “data, not documents”. This has a nice ring, but is short on detail, and ignores the fact that the current planning system is based on a definition of land as a ‘corporeal hereditament’. In the modern world, land and buildings have digital identities that precede, enmeshes with, and survive the physical and we need an evolved definition of land as a digital/physical hybrid where land is “corporeal” entity but also part of an interactive digital supply chain of goods and services. The Government could also promote a “digital by default”, mandate for processes such as publication of notices and consultation and require the adoption of clear data standards such as those promoted by RICS.

A number of local planning authorities are already exploring ways that digitalisation of processes can both improve services while reducing resources: fifteen projects were awarded funding by the Local Digital Fund in 2021 including reducing invalid planning applications, back-office planning systems and digital place-based engagement. There is much more that could be done by local authorities, including strategic digital planning policies, the formal adoption of data standards, training on digital planning for officers and members and more collaboration on the creation and maintenance of datastores and exploring opportunities for collaborative data sharing.

The move towards digitisation will require fundamental re-wiring of land development processes by developers as well as local authorities and central government. For example, as well as a survey of the physical land, developers should also scope the digital environment of their proposal – identifying data suppliers, the types of data that will have to be disclosed, and areas of potential future risks such as embedded biometric technologies. This initial scoping exercise could also explore ways that risks could be mitigated with embedded safeguards and robust consent processes, and identify digital benefits, such as the creation of real-time environmental information on air quality or transport impacts and the potential for this data to contribute to national or local data stores. The impacts and the benefits would then be available for consideration alongside the physical changes, integrating the physical and digital elements of development within normal consent processes.

AI and planning decisions: making room for the machines

For planning nerds, 1947 is the year of the first modern planning Act, but with hindsight it is far more significant as the year when Alan Turing gave a lecture to the London Mathematical Society on the Automatic Computing Engine and its transformative possibilities. In 2021 it's increasingly clear that machine-based artificial intelligence offers multiple ways to improve planning – but raises new issues too, particularly where it is based on non-interpretable systems.

AI can help to automate a wide range of planning functions – for example it is increasingly easy to see how the current, inert process of environmental assessment could be replaced with a real-time platform of information flows, analytics and predictive modelling which can be interrogated to predict both the impacts of development and the effect of mitigating measures. The Biodiversity Metric is just one example of an analytic tool that will bring forward the movement towards



Data has a better idea

metrification of environmental impacts and benefits, while the government has recently confirmed that its ENCA tool for measuring natural capital will be used as supplementary guidance to the Treasury's Green Book calculations.

However, AI has its issues. Poor datasets lead to biased decisions and raise ethical issues considered in greater detail below. There is a lack of public trust in 'mutant algorithms' which has already resulted criticism of the proposed use of a predictive algorithm in the context of assessing housing need requirements. And there are some emerging legal risks - as algorithms begin to proliferate throughout the planning process, disgruntled parties may seek to challenge decisions on the basis that they were not made by a human, or fully reasoned in a human sense. The Committee on Standards in Public Life has advised that public bodies 'should not implement AI without understanding the legal framework' but there is little evidence that potential legal and governance risks are considered in decisions to use AI in planning processes.

The most effective way to integrate emerging concerns about the new technology into the current system is to address those issues transparently at all levels of the planning function. Some local authorities already have strategic digital policies; these should include, at a minimum, an explanation of what AI is, the principal benefits and risks, the relevant legal and policy context and where to go for further information. Most local authorities implement the

use of automated technologies through the use of externally procured software; the process should include questions on data sourcing and training, equalities issues, cyber security, liability for defects, and data ownership and sharing. Finally, where AI is involved in any aspect of a planning decision, it would be good practice to acknowledge and address this in the decision, itself, alongside any other legal implications.

Digital Ethics: embedding good practice for a digital future

Algorithmic decision-making is a daunting prospect, but the human brain is the ultimate "black box", influenced by political affiliations, unconscious bias, or even the contents of its host's last meal. Existing legal and procedural mechanisms exist to provide a coherent framework that makes public decisions more transparent and accountable; if the planning system is to make the most of technology while still maintaining public trust, these existing frameworks need to adjust to a digital world.

There is no legal definition of ethics, but there are some regulatory safeguards that protect ethical standards. Public engagement is secured through a range of publicity and consultation requirements in the planning process, planning decisions must take account of equalities and human rights implications and local authorities are bound by the Nolan Principles and codes of conduct. Emerging technologies disrupt these considerations: while smart engagement has the ability to open up the planning process to new participants, it may exclude others unless adequate protections are put in place. When an algorithm has been trained on inadequate data or programmed badly its outputs can embed and amplify social inequities. Sensory technologies such as live facial recognition engage and infringe human rights. We need to expand our current codes and standards to include specific data ethics considerations and there are some emerging that are specific to property such as the six principles proposed by the RED Foundation and the 10 Principles of the Locus Charter.

Conclusion


Back in 1902, Ebenezer Howard recognised that his radical re-visioning of urban development could only be achieved through 'the hearty co-operation of men and of women experienced in very numerous departments of human activity'. The Government is in the process of producing a National Data Strategy, and is promising an AI Strategy in the autumn, in the meantime, this is the perfect time for co-operative local authorities to work with forward-looking developers and trusted data institutions on the co-creation, not just of policies and standards, but good digital practice at every stage of the development process.

Dr Sue Chadwick, Strategic Planning Advisor Pinsent Masons LLP. This piece is a summary of a paper completed after a year working as a Research Fellow at the Open Data Institute which can be viewed [here](#).

The Energy and Transport Revolution



Angus Walker
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Since the government committed to 'net zero' carbon emissions in July 2019 it has been scrambling to make the policy changes necessary to make the commitment a reality. Taken together, the changes mean a revolution in the way we live is coming.

Emissions can be split into five areas, each with its own challenges. In increasing difficulty of decarbonisation, the areas are as follows.

First, electricity generation. This area has made the most strides in decarbonising since 1990, reducing emissions by 70% up to the end of 2020. The remaining 30% will need a combination of wind and solar power, possibly some nuclear, and any remaining fossil fuel generation will have to have its carbon captured (see below). For this sector at least, the general population won't notice any difference and the path to net zero is reasonably clear and achievable.

Next, transport. All vehicles will eventually have to be electric or powered by zero carbon fuels such as hydrogen, and as electricity decarbonises, so will transport. First, new vehicles will have to comply – in the case of cars it is now government policy that no new petrol or diesel cars will be able to be sold in the UK from 2030. Eventually – although this is not policy yet – existing cars will need to be converted or scrapped. That is going to be challenging, particularly since people on lower incomes are more likely to have older vehicles and less means to replace them.

Then there is heating and cooking at home. Did you know that it is already government policy to ban the sale of new gas boilers from 2025? Homes will have to be heated either directly by electricity, indirectly via heat pumps (a sort of reverse fridge) or by fuels such as hydrogen, and the same goes for cooking. Again, the big challenge will be converting existing homes equitably.

What happens at home will also have to happen at work, which for offices will mainly be heating. But industrial processes produce a lot of emissions that are not so easily decarbonised. For example, steel production needs very high temperatures and alternative methods to burning fossil fuels have not yet been developed. The key here is to capture the carbon dioxide as it is produced so that it is not released into the atmosphere, and then dispose of it (or possibly reuse it, as long as it still doesn't get released). The most promising disposal sites are under the North Sea where natural gas was once found – replacing one gas with another. And no, it won't float up to the surface, just as the natural gas didn't.

As you can see, the decarbonisation of transport, homes and industry will require a huge increase in electricity supply, since a lot of it depends on converting the direct use of fossil fuels into electricity instead. This only increases the decarbonisation challenge for electricity as not just existing electricity consumption will have to decarbonise, but so will all the extra consumption. The government has a target of 40 gigawatts of electricity to come from offshore wind by 2030, which is pretty ambitious given that total generation from all sources was 47.4GW in 2020, but it is necessary given the huge increase in demand that will occur.

Finally, possibly the trickiest sector to decarbonise is agriculture, where the main emitters are animals burping and farting (burping is actually worse). This time it is not carbon dioxide but methane that is the main problem, which although it doesn't last as long, is 80 times worse than carbon dioxide for global heating while it is around. The most obvious solution is likely to be unpalatable to governments - reducing meat and dairy consumption – but that is just what the government's adviser, the Climate Change Committee has advocated amongst its 'speculative options' for the last step to achieving net zero.

The other behavioural change it suggests is flying less, because it considers technology will not come to the rescue for decarbonising aircraft in time. However in the two years since it produced its main net zero report the government has embarked on an aviation decarbonisation initiative, called, wait for it, jet zero. This will aim to use electricity, hydrogen and 'sustainable aviation fuels' to achieve low carbon flying, so perhaps a change in behaviour will not be necessary.

The revolution is here! Over the next 28 years everyday life in the UK will be transformed as we change our homes, offices, vehicles and farms to meet the net zero challenge.

Ministry of ...



Aleksandra Njagulj
Global Head of ESG for Real Estate
DWS

Having gotten through the first chapter of “The Ministry of the Future” by Kim Stanley Robinson, I half-expected and full-desired all of the rest of the large volume to be about people and institutions all over the world jumping into real action. All to prevent what is described from happening ever again. The chapter recounts, in excruciating detail, the slow deaths of many thousands in an all-to-easy to imagine deadly heatwave in India. We go through scenes of desperate efforts to survive, descending into crime and violence, all in vain. Year this happens? 2025. All, but one, die.

The book belongs to the literary category of climate fiction or cli-fi. Marrying fiction, world-building and, though missing from the name, science, the (near) future of humankind in the world of changing climate is imagined. Needless to say, these are mostly dystopian novels.

Albeit ending on a positive note, it could be said that The Ministry of the Future is largely dystopian. One message seems to be that we are going to need a much bigger stick. The Robinsons’ world changes, but only after many more hundreds of thousands of deaths in disasters, wars and even acts of eco-terrorism.

Many decades after Mark Carney talked about the tragedy of the horizon, the book’s society still struggled to put a real value on future generations. It did happen, but a pretty large carrot had to be in the offering. Doing something good for the future has to pay right now. Especially if action is to be undertaken to the extent required. Industrial-scale doesn’t begin to describe it, we’re talking geoengineering here. Robinson puts forward carbon coins as the incentive in question, backed by the world’s central banks, issued by them for extraction or avoidance of emission of one carbon ton.

One certified carbon ton, presumably growing the “Big Four” to the “Big Four Hundred” in the process. Many would argue, as dystopian as it gets.

Spurred by the two, the stick and the carrot, the Promethean in humanity ultimately saves the day. Robinson discusses a range of solutions, successful and not. They are mostly based in or adapted from the current technology. Cryptocurrency forms the basis of the carbon coin, while novel’s scientists use energy industry oil pumping capabilities to displace vast amounts of water reducing sea-level rise. Even though a fictional novel, this book is a great learning resource and a repository of ingenious ideas and approaches already in the making.

And lastly, while we meet individuals along the way, it is the institutions and organisations, not least the titular Ministry, that affect the needed change. Or, put differently, it is the institutions and organisations that need to change in order for individuals to survive.

The next Conference of Parties, the 26th, is around the corner. We can but hope our leaders will not wait for a bigger stick.



the Future



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In speaking with Aleksandra about co-authoring an article, it dawned on me that the title of her book review, “Ministry of the Future”, is indeed very aptly named when considered from the perspective of family-owned business. By its very nature, family-owned businesses often have a long-term future orientation that looks beyond the short-term gain, and wrestles with the questions of how best to make decisions today for the benefit of the next generation tomorrow. Indeed, the concept of stewardship of resource for the benefit of future generations comes naturally to many multi-generational family-owned businesses.

During the last 15 years, I have had the privilege of working with two incredible private family-owned businesses predominantly invested in real estate, previously at **Grosvenor** based in

Mayfair, London, and now at **Howard Group** located in central Cambridge. I wish to briefly expand on the concept of stewardship in business, a distinct characteristic in family-owned business that is fundamental to sustainability and sustainable business practice.

Family businesses supply approximately half of the employment opportunities in Europe and North America and account for nearly two-thirds of all the companies in those regions. In fact, in most countries, family businesses account for 40-60% of all private-sector jobs, and most start-ups (85%) are actually funded by family money. However, leading and running a family-owned business can be incredibly challenging. According to The Family Business Institute, only about one third of family-run businesses survive into the second generation, with just 10-20% remaining “viable” by the third generation. There is much we can learn from those that endure. By way of example, the Grosvenor family association with London property began over 340 years ago in 1677 when land to the west of the City of London came into the family following the marriage of Sir Thomas Grosvenor to Mary Davies. The Howard Group was originally founded as a Bedford-based coal and coke delivery business in 1935, and by the 1980s emerged as a significant investor in commercial property. Today it is focused exclusively on property investment and development as well as venture capital activities in knowledge intensive, technology, and medical technology businesses.

A key underlying principle I have observed throughout is that of stewardship, responsible ownership and legacy for the long-term. The Institute for Family Business very helpfully explains how stewardship historically reflected the need for stewards (owners or managers) to account for their actions to resource-providers. However, in a family business the concept takes on a much broader meaning. Families in business often have a long-term orientation and the business is managed not just for today but with future generations in mind. This is commonly described as handing on the business and entrusted resources (be it family, financial, people and social capital) to the next generation in a better state than received. The best manage the present while investing in the future, allocating resources to areas not immediately linked to short-term profitability, such as training, research, infrastructure, and next generation leadership development, with a focus on capital investment as well as revenue growth, succession planning as well as performance management, and reputation as well as results. Extrapolating further, that sense of long-term commitment very often includes a long-term focus on customers, employers, suppliers and the greater community, all principles that fit in well with focus on sustainability. Furthermore, private ownership structures do not have to answer to financially short-terminist public structures that can pressure today’s short-term gain, come what may.

Stewardship also embraces broader concepts such as trustworthiness, honesty, a sense of responsibility and community. A ‘stewardship culture’ in family businesses often translates into extra focus on non-financial and long-term objectives beyond pure profit. As we all observe, our environment is increasingly characterised by scarcity, disruption and instability. Business innovation is leading to rapid and transformational changes in technology, consumption patterns and lifestyle aspirations. These societal shifts and changing expectations mean that companies are being urged to take a more active role in addressing society’s problems and lead change in response to urgent and systemic social and environmental challenges. There is a strong drive towards people and purpose beyond profit, and a need for businesses to become responsible stewards of change for a better society and future. Family-owned business often seek to answer to this call, balancing financial, environmental and social performance, as often referred to as the triple bottom line.

In conclusion, I would venture as far as saying that family-owned businesses have a sustainability advantage. They have a voice that is able to shape and influence the future. As so well summarised by the IFB Research Foundation, such family businesses keep a clear sense of long-term vision, balancing long-term objectives and short-term performance; engage publicly in sustainability issues and leverage their position to influence supply chains; develop people and talent; and focus on resource efficiency to avoid depletion of resources and ensure materials security. A favourite definition of sustainability springs to mind contained in ‘Our Common Future’, the 1987 report from the United Nations’ World Commission on Environment and Development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Let us all rise to the challenge of making better decisions today for the benefit of the next generation and society of tomorrow.

Sustainable finance for green retrofits



Ami Kotecha

Co-Founder, Amro Partners & Chair of
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According to a recent report by GRESB, (Global ESG Benchmark for Real Estate Assets) a growing number of the UK's private and listed CRE companies are participating in voluntary ESG and climate-related disclosures. We have also witnessed wide-ranging levels of public commitment to Net Zero compliance by 2050 at corporate level, portfolio level and at individual asset level. The BBP's (Better Buildings Partnership) Climate Commitment Group has enjoined 26 of the world's largest real estate companies, representing c. £240bn AUM, who have committed to Net Zero pathways prior to COP26, many more are expected to join in the months leading up to the COP.

Equally, international credit markets have experienced a boom in sustainability-linked loans and green finance, however, the CRE sector attracted a trivial 12% of these loans in 2020 in the form of direct disbursements and even lower proportions in previous years.

A combination of factors is responsible for this lack lustre availability of sustainability -linked financing facilities for the real estate sector including a lack of clear policy guidelines and a lack of clarity about what constitutes "green". Both issues point to weak market signals that we expect will be dealt with in new legislative guidance and universally applicable frameworks at the forthcoming COP.





On the supply side, there is a lack of wide-spread availability of green lending that adequately underwrites and rewards sustainability at each stage of a development's value chain by using forward-looking KPIs. For supply of debt finance to grow at scale and at pace, the real estate sector must adopt standardised, science-based, whole life carbon (and CO₂ equivalent) mitigation methodologies that can be readily applied by lenders and that can also form the basis of green CRE bond issuance for large-scale, public/ private sector emissions mitigation projects such as decarbonised district heating systems.

On the demand side, there is a growing recognition of risks associated with stranded assets. Unfortunately, the lack of widely available finance that sufficiently incentivises complex retrofits is moving major asset owners towards divestments to meet their carbon budgets and Net Zero commitments.

Where capital is available to fund retrofits, guidelines that clearly target carbon reduction levels rather than EPC ratings are essential to avoid locking in sub-optimal upgrades. Using EPCs to evaluate building performance is fraught with risks due to the poor visibility of in-use emissions and requires more real time measurement.

The uptake of finance for deep retrofits is inevitably reliant on green supply chains that avail cost and scale efficiencies. A report by MSCI Climates Analytics estimated a 2.5%-3.5% decline in building valuations due to capital expenditure required to address climate-related risks. Policies that support the growth of green supply chains are crucial for reducing cost per unit of CO₂e (carbon dioxide equivalent) reduced.

Finally, to spur supply-side innovation in climate-related fintech it is important that we invest in digitising our built environment. At Amro Partners, our strategy is centred on digitisation and decarbonisation. Investments in our technology stack play a key role in the delivery of our Net Zero commitment. Inevitably, the sector's adoption of smart building technology will impact our ability to link finance to occupier and owner behaviour. An example for the residential sector is green mortgage finance linked to 'smart' homes. Currently, green mortgages form a small proportion of overall lending to the residential sector and those available are linked to EPC A and B ratings. This not only limits the supply of green mortgages to a small proportion of c. 1% of qualifying homes but it also detracts from long term carbon mitigation by failing to continually measure in-use emissions. In its 6th carbon budget plan, the Climate Change Committee estimated a net cost of c.£260bn to finance deep retrofits of the UK's standing stock of homes. The expenditure ought to be perceived as a significant opportunity for green finance innovation that can drive demand carbon reduction.

Author: Ami Kotecha is a Co-Founder at Amro Partners (www.amropartners.com), a Fellow of the Royal Society of Arts, a Board Director of the UK PropTech Association and Chair of CULS' ESG & Sustainability Forum.

Date: Sept, 2021

The path to carbon net zero

Property companies are turning to offsetting their carbon emissions as part of their plans to become net zero. But what is offsetting and what are the options and outcomes for investors?

Why is the ESG agenda growing for property investors?

Emily Hamilton (EH) Market demand. Sustainability is no longer a USP, it is required for successful businesses. That has to do with policy and regulatory changes, as well as public perception. Covid-19 has also shown that ESG-focused funds, particularly logistics with high sustainability credentials, have been the most resilient throughout the pandemic. That provides more impetus.

How does carbon offsetting fit in?

Emily Norton (EN) It's a way for companies to take responsibility for unavoidable carbon emissions from their businesses – by investing in environmental projects to balance out their emissions.

EH For the property sector, it's difficult to get buildings to be zero carbon emissions immediately. The technology is well-developed but the funding and policy structures aren't there yet. The other issue is that, at present, you cannot be net zero for developments because of the materials employed, e.g. steel. Sustainable materials like timber are also finite. If we are going to develop homes, schools and hospitals, then careful and considered offsetting has to be part of the transition strategy.

What are the offsetting options?

EN Generally, you are paying for land use change or management systems that avoid land use change. For example, paying for the management of forestry rather than cutting down forests is one method to avoid land use change. Another would be to pay for the restoration of habitat that can store carbon, such as planting forests. There are risk profiles in all of those offset mechanisms and, generally, planting trees is the least risky because you can see the trees and measure the carbon.

Is there a danger that offsetting replaces the work companies should be doing to decarbonise their businesses at source?

EH Yes, in some cases that is happening because there's no verified standard for net zero carbon. Some companies say their building is net zero carbon if they've just switched all their energy to green supplies. Others claim they're zero carbon if they've not designed to any particularly good carbon emissions standard and they're just offsetting it all at the cheapest rate, so \$7 per tonne of carbon.

EN These problems come back to the cost of a tonne of carbon. While the external cost of buying a carbon offset remains unregulated in real estate and is so cheap, it reduces the internal incentive to make the investments needed to get to net zero. It becomes more efficient to offset than it does to invest. That's why some companies are setting aggressive, internal carbon taxes on themselves to balance the economic decision-making internally.



Emily Hamilton
Head of ESG, Savills Investment
Management



Emily Norton
Head of Rural Research, Savills UK





What is the market rate for offsetting?

EN The current market price is around \$28 per tonne in the UK. However, the most progressive property companies are currently setting an internal rate of about \$125. A recent report from Wood Mackenzie estimates by 2030, it will need to be \$160 per tonne globally.

Are there also ways for companies to help set offsetting levels and disclose them?

EH There isn't a standardised approach. The Better Buildings Partnership in the UK has a net zero carbon framework, which encourages companies to reduce emissions and set out transparently what their net zero carbon pathway covers. Some real estate companies are also using Science Based Targets (SBT).

So, how can the industry improve?

EN With partnership schemes between organisations. Here, you might have an NGO working with local communities to create a conservation-based scheme where the carbon benefits of habitat management are sold to an investor. But these types of schemes have a more complex story and it's harder for the investment community to engage with. It's more bespoke but less scalable. The more unpredictable nature-based solutions also have co-benefits such as improving employment or biodiversity. But they become less investable as there's more risk and less certainty about measurable offsetting benefits. We need to think about this because the biodiversity crisis is urgent.

What guidance is there for investors?

EH It's increasing. The UK Green Building Council's best practice guidance has eight carbon off set principles that include aspects such as being measurable, independently verified and representing permanent emission reduction and removal. Additionality is another important factor. A project needs to demonstrate that it could not have taken place without the offsetting finance and achieves more than it would have if it had not been carried out.

Are there broader environmental outcomes for property investors in offsetting?

EH If it's done at a large enough scale it could really start to stimulate regenerative projects. For example, could we link up with a client's other managers because we're doing this as a property investment manager? What are the other asset classes doing? If you could find a way to collaborate, if we need to offset then we could be supporting the wider corporate environmental aims of many organisations to go beyond singular tree planting or one-off renewable energy projects. Personally, I'd love to see investment in greening our cities at scale.

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Achieving carbon zero:

can the built environment become a carbon store?



Hannah Durden
Sustainable Development Director

This is my third sustainability-themed article for the CULS magazine and I am delighted to see the pace at which the industry has embraced the challenges posed by the climate crisis over the last three years. The rhetoric really has shifted and sustainability has gone right up the agenda.

I will take you on a whistle-stop tour of some of the building materials that I think will transform the way we design and deliver buildings over the next 10 years. Some of these materials are the result of both innovation and technological improvements and others have been around for thousands of years but innovative mindset and policy is needed.

In the same way that buildings which are able to create and store excess energy and return this to the grid I think that we will get to the same position with our buildings' ability to both store carbon and reduce emissions. I am certain that we will see carbon and waste-taxation becoming prolific across all walks of our lives so being able to offset this through design and construction with materials that sequester carbon has to be a key consideration for all building owners and developers.

Looking to the Natural World

The carbon storing material that should be at the top of everyone's list is wood. It is one of the easiest 'sustainable' materials to understand because it's both renewable and sequesters (stores) carbon. As with all the materials that I discuss herein, please check that the source and supplier is following the relevant sustainability practices – this includes their labour and diversity of governance. In the UK the main ways to demonstrate timber is sourced sustainably is by obtaining certification from either the FSC® (Forest Stewardship Council) or PEFC® (Programme for the Endorsement of Forest Certification). This type of action relating to your suppliers will also help with your Scope 3 carbon emissions.

Cross-laminated timber (CLT) is formed of panels made up of alternating layers of perpendicular boards to provide strength. As a result it allows forest resources to be more fully utilised because small-diameter, pest-damaged trees and even trees killed by wildfires can be used in fabricating the boards. The layering creates additional strength providing a material that is both stiff and stable yet is relatively lightweight. CLT panels are also fire resistant and can even hinder fire spread as debated at length in an Architect's Journal panel discussion back in 2019. CLT can often be substituted for steel, even in high-rise construction, as demonstrated by the world's tallest CLT tower, Mjøstårnet, which completed in March 2019 in Brumunddal, Norway.

Hemp is thought to be more effective than trees at storing carbon and JustBioFiber have created lightweight composite building blocks which are highly resistant to fire, mould, and insect damage. The blocks – which look like breeze blocks – are manufactured to create an interlocking wall system but which can also be cut to size on site. In the UK hemp blocks are used as a thermal and non-load-bearing block which requires a timber structural frame and so large developers see this as a more costly and complex build as well as a fire risk. The IsoHemp Hempro system has been created to change this by providing a structural frame, although there is still some reliance on concrete to reinforce this.

Calplant MDF rice straw panels utilise a carbon-sequestering waste material, rice straw, that is normally disposed of by farmers flooding their fields to speed up decomposition and using large amounts of valuable water to do so (70% of





water consumption globally is in agriculture). The upcycled medium-density fiberboard (MDF) that is formed – without the formaldehyde-based resins that give MDF its bad name and smell – is being commercially produced in California which has the second biggest rice farming operation in the US behind Arkansas, helping to reduce transport costs of the raw materials.

By using straw that otherwise would be destroyed, CalPlant's transformative process promises to reduce the water consumption and methane emissions that currently result from growing rice. It is a truly circular process – taking a waste product from the growing of rice – and preventing manufacturers from having to cut down trees for raw materials – a process that would typically release carbon dioxide into the atmosphere and eliminates trees that otherwise would remove CO₂ from the atmosphere through photosynthesis.

Low-carbon insulating materials offer more mainstream options to help us retain the heat, and therefore energy, that we use in our homes and commercial buildings – one of the key elements to minimising our carbon footprints. There are a number of eco-friendly options from loose fill cellulose insulation made from recycled newspaper (Thermofloc) to Inno-therm insulation made from recycled cotton/denim. The latter has been proven to exhibit lower carbon emissions: 0.9 CO₂e/kg as opposed to the 1.6 CO₂e/kg that a mineral wool insulation emits. Inno-therm is produced within a circular supply chain and exhibits lower total carbon emissions within its production life cycle compared to a mineral wool insulation material which typically follows a linear supply chain route in its production life cycle.

Hemp flax thermo board provides a natural alternative to flexible glass fibre insulation that sequesters carbon and can be made using 100% renewable energy. It can last for decades due to stable and tear-resistant hemp fibres and the raw material does not promote mould growth. It contains no nutrients or proteins to support insect life and is fire-retardant (using sodium bicarbonate) for excellent fire protection in line with building regulations.

Sheepswool insulation, for example CosyWool by Thermafleece, is another natural option for insulation from a renewable source and has the additional benefit of being a waste product from the food industry. Another recycled by-product option is Supaloft which contains recycled polyester and is made almost entirely from recycled plastic bottles, with a recycled content of over 95%. Crimped polyester fibres provide loft and maintain durability ensuring the insulation lasts the life of the building in which it is installed.

An exciting development that deals with concerns about fire performance is that of Ecomat which is a basalt fibrous insulation material providing heat and acoustic insulation. Developed in Georgia and the Ukraine this material is considerably more dense than traditional rockwool insulation and takes up less space as a result.

Last on my list of 'natural' materials to help sequester carbon is olivine sand. It is one of the most common minerals on earth and is capable of absorbing its own mass in CO₂ when crushed and scattered. It can therefore be used as a replacement for sand or gravel in landscaping and can be added to

agricultural treatments to be spread on large swathes of land. The carbonated version can also be used as an additive in the production of cement (see below), paper or 3D printing filaments.

Innovation in Man-made Materials

A major contributor to carbon emissions in the built environment is concrete. Cement accounts for around ten percent of greenhouse-gas (GHG) emissions globally. Green concrete focuses on three strategies: cutting GHG emissions; reducing inputs of natural resources, mostly by substituting recycled materials; and lessening air, land, and water pollution related to its production. Ceratech, a U.S. company, has created a feed mixture for cement that is 95 percent recycled fly ash and five percent renewable liquid additives, yielding an almost zero-carbon footprint. Its concrete mixes reduce virgin resource inputs by 95 percent and water by half. This hydrated cement has superior properties to Portland cement, the industry standard. Another innovation is a cement that cures by absorbing CO₂.

Canadian company, Carbicrete, has developed concrete that captures carbon during production while substituting emissions-intensive cement with waste slag from the steel industry. At present the process relies on capturing industrial emissions but there are plans to draw the CO₂ from the atmosphere via direct air capture (DAC) which would result in a carbon negative material.

A similar material, known as Carbstone, is made up of recycled waste concrete and stores up to 600 kilograms of CO₂ per tonne of cement which is forever captured into the material. During the production process CO₂, that was directly captured from concrete factory emissions, reacts with the formula creating a concrete-like material. Because of this CO₂ is transformed into a raw material which brings it back into the value chain. The formula for this new type of concrete was developed by the Flemish Institute for Technological Research (VITO) and could radically improve the possibilities for recycled concrete and shift the balance of CO₂ emission in the concrete production-chain.

Made of Air is a charcoal-like material made of forest and farm waste which sequesters carbon and can be used for everything from furniture to building facades. The non-toxic bioplastic is made from biochar, a material that is recyclable and 90 per cent carbon, storing around two tonnes of carbon dioxide equivalent for every tonne of plastic. It is made by burning biomass such as forestry offcuts without oxygen as part of a process called pyrolysis. It has been produced for centuries and is increasingly being used as a fertiliser as a way of sequestering carbon in the soil.

Where the thermoplastic biochar cladding has been installed on an Audi dealership in Munich the seven tonnes of HexChar panels are calculated to store up to 14 tonnes of carbon. Most importantly and, unlike decaying biomass – a common problem with 'natural' materials – biochar remains stable for hundreds or even thousands of years which is of significance if we are to create buildings that last.

Made of Air's biochar is cheaper than regular bioplastics but still more expensive than petroleum-based materials. So are these the materials of the future? Biochar's CEO believes that



Government intervention in the form of a carbon tax is needed to help products made from captured CO₂ to replace plastics made from fossil fuels. 'What if everything we're surrounded [by] was removing carbon emissions instead of releasing them'. He is also of the view that the price of materials needs to take into account the cost to the planet and people and, until this mindset overtakes that of the average capitalist, government intervention is needed to shift perceptions and pricing models. Putting a value on the emissions associated with their production and their damage to the environment will be the most useful catalyst.

Internal Fit Out

Going inside our buildings, plasterboard is the third most widely used building material on the planet, according to the Centre for Sustainable & Circular Technologies at the University of Bath, and is directly responsible for more than 3% of the UK's CO₂ emissions. In response to this Adaptavate have designed Breathaboard which is a breathable bio-composite that offers a lower-carbon, more sustainable alternative to plasterboard.

Interface, the American carpet-tile manufacturer, have already created carbon negative lines called Embodied Beauty and Flash Line which are made from recycled plastic and various biomaterials. But the tiles are only carbon-negative from cradle to gate meaning that they are not negative for their full life-cycle because of having to transport them and the lack of control over how they are disposed of at the end of their useful life.

Practical Challenges

In practical terms, setting ambitious targets for carbon emissions across the whole life cycle of a building is without doubt challenging. Gareth Roberts at British Land explains that they apply an internal tax onto their appraisals to help change behaviours and create funds to offset any remaining embodied carbon at PC that couldn't be eliminated during development. He goes on to reiterate the challenges of using certain building materials – some which have been around for hundreds of years. There is a section of the development community that isn't incentivised to innovate and take risk - building control, fire brigade, insurers in particular; all waiting for the outcome of the Grenfell Inquiry. There are also issues with supply chain availability and resilience which, in a post-Brexit, Post-Covid world, are very real and can have significant effects on both cost and programme.

That all said and done, researching this article has made me hopeful for the future prospects of the property industry after reeling from the IPCC 6th Assessment report released over the summer. There is innovation going on in abundance, but the challenge now is to ensure these materials are commercially viable and available in the quantities needed for them to become mainstream.

Hannah Durden set up CNZW – Carbon Neutral Zero Waste – Developments Ltd in 2020 and has been advising a variety of clients in the commercial and residential sectors on all forms of sustainable development at both a project and portfolio level. If you require further details please visit cnzw.co.uk, call + 44 (0) 77 39 13 40 74 or follow @carbonneutral_zerowaste for the latest CNZW headlines and musings on Instagram

Our Built Environment could do with a New Top Layer WE NEED TO TALK ABOUT ROOFSCAPES...



Oscar Rodriguez
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Meaning of Life: More and better stories

If we are to “Build Back Better” where should we begin? Of all of the components of our built environment, the roofscape is, in this Author’s opinion, the most woefully underutilised and most consequential of what a transition to a solar-oriented economy looks like. As the direct interface of our cities to our only source of energetic income, by all accounts, it should be the city’s most febrile zone of activity once the dinosaur juice monkey is off our backs. So why are our roofscapes so dull?

The Author recently appeared on a Catalan webinar called “48hrs of Urban Agriculture” on a panel with some colleagues about rooftop greenhouses and blurted out something along the lines of this...

“Cities are kitchens for story-making - a pitched clay tile roof generates very few stories, mainly maintenance anecdotes and tragedies. A rooftop greenhouse would generate countless possible interactions, relationships, and is frankly far more interesting than a lid whose sole purpose is shedding rainwater, managing snow loads, mitigating thermal losses and protecting contents from the elements.”

Assuming that we all agree with the premise that what fundamentally differentiates us from all other life forms; the formation and recording of stories, is what we should be optimising for, I propose our roofscapes are a low lying fruit for improvement.



Regenerative: Baskets, not Shields

As an architect pushing urban food systems with a focus on building integrated greenhouses among other urban food system solutions, I am enthused at how “Regenerative Architecture”; the employment of natural systems as intrinsic components of the building, is rising in architectural discourse. Beyond living walls and strategic planting is also a greater conscientiousness about the provenance of building materials and the bioeconomies that underpin them. Many proponents have employed the metaphor of a building being more “like a tree”, replacing the modernist mantra of “a machine for living in”.

Like trees and foliage, perhaps we should also start to conceive of building skins more as receivers than protectors; as shields more than shields. A basket accepts incident sunlight, rainwater, winds and unobstructed views. Rooftops conceived as shields protect against these, reject their inherent value and convert them into waste streams, risks or maintenance liabilities. Converting inert urban surfaces into something generative will reduce city dependence on increasingly volatile energy, food and water supply chains, greatly improving their metabolic profiles and dampening the effects of shocks like the ones plaguing the UK this year.

So if the reader might permit, the Author offers the following approach framework.

An approach framework

Pitched rooftops are, by far, the most prevalent type in London. Of the approximately 200 million sqm of total London roofscape, only about 10% is flat. In other words, 180 million sqm of our built environment’s highest surface is inert, imposes unmitigated loads on our stormwater infrastructure, from time to time diverts snow loads and generally should be replaced every X number of years depending on what material it is clad with. For the sake of argument, let’s call this Level 0 and consider incrementally what constitutes an upgrade.

Level 1: An informally used maintenance access only flat roof hosting some mechanical plant.

The last refuge of the office smoker is not an inspiring image for the coming solar economy. A grey roofscape covered in bitumastic nasties and the odd protruding exhaust is a prime wasted opportunity. The C40 confirmed this sentiment in July by committing to converting 30-40% of built area to hosting natural capital in some form and anecdotally, the Author has never had this urbanistic disappointment contested.

Level 2: An extensive green roof with some walkable areas for informal amenity.

We’ve all thrown sedum blankets on rooftops and claimed our BREEAM credits but I’m sure at some level felt we could be doing more. The thin substrate of popular sedum blanket green roof systems is not a guaranteed carbon sink as lax maintenance and a “fit and forget” mindset has led to die-off and net carbon emissions. This is the go-to flat roof covering for most new developments. Arguments raised against improving upon this include cost, health and safety, suicidal student risk and opportunity cost against solar generation. Level 2 offers the illusion of due diligence while not guaranteeing outcome and will prevail as long as we treat the Climate Emergency as a secondary concern.

Level 3: A controlled access intensive green roof with/ or solar PV/thermal array designed and some light informal amenity on designated paved or decked areas.

At this level, a more involved maintenance regime and capital outlay is required but the host building benefits from stormwater mitigation, biodiversity contributions and renewable energy. A building could be said to be making a valuable contribution to the health and wellbeing of its city, supporting biodiversity, mitigating urban heat island and stormwater loading, and if hosting renewables, alleviating reliance on fossil fuel-fed energy sources. If we were as ambitious as we now claim to be, this would be the new normal. The only limitation is its story-generating potential is limited by a lack of non-functional human interaction.

Level 4: A fully accessible private or communal garden comprising planters or planting beds with/without some renewable generation but formally programmed as an amenity space and designed for intense use.

A rooftop activated at this level would be well beyond criticism as it represents the baseline that treats the roofscape like a respected component of its host with inherent value rather than a lid we feel compelled to dress. The continual use will demand a maintenance regime meaning the space is just as consequential as what the building encloses without enclosing anything.

Any space you can conceivably get married in is one that will generate the kind of stories that make living in cities great. Fabrix’s much lauded Roots in the Sky in Blackfriars is a great example. This was firmly understood when Paris mayor Anne Hidalgo announced her 15-minute-city urban plan policy alongside the Parisculpteurs programme with the express aim of creating a city where green space and fresh produce would be available to anyone within 15 minutes. Oslo has since declared their intention to become a 10-minute city while Helsinki, (perhaps largely down to the cold) is aiming to reduce this down to 5 minutes.





Level 5: A rooftop greenhouse or a formally programmed amenity space comprising an enclosing structure of some sort that requires maintenance with/without renewable energy components.

At this level, a new rooftop structure's relationship with the host building's access, servicing, structural and thermal strategy would be subject to an involved design process and a range of integration options. Rooftop playgrounds, enclosed in netting, or ancillary structures outside of the host's thermal line would fit this description but offer little metabolic synergy potential. Rooftop greenhouses hold the most holistic value promise and much like a conservatory, offer a range of different integration levels around their relationship with the host building's thermal line.

If committed to horticultural production, a technologically-enabled hyperlocal food production capacity knocks out emissions from production and transport logistics, mitigates host building thermal losses, offers a direct carbon sink for boiler exhausts (if correctly managed) and would help reduce our embarrassingly high dependence on foreign fresh produce imports. The built environment and our food system are our largest GHG emitters; attacking both concurrently would seem logical but

For retrofits, the first consideration is understanding what product market you are addressing since an operator will not have the luxury of unlimited storage space. If the demand and price point of your product is good, the next consideration are the limitations imposed by the site; the area available, the roof structure, the access strategy, etc. . . If these are workable and within budget, the growing system and operations strategy can be confidently progressed. For new-build or extension integration, the design process is far less risky.

A rooftop greenhouse need not necessarily be about horticultural production. As Tailor Made Arkitekter's Uppgrena Naturhus community centre illustrates, a passively heated hot yoga session on a Swedish summer's day would probably be delightful. If it cannibalises the need for an energetically expensive, fossil-fuel fed heater for half the year, this would be a step in the right direction.

The UK is well behind the curve

Unlike most of our peers in Europe, the Americas and Asia, the UK has yet to build and operate a publicly-accessible, long-term building integrated greenhouse concept despite conservatories and orangeries being a familiar feature of our local vernacular. We have some built examples...

The ill-fated Biospheric Foundation in Salford was the UK's first foray back in 2013-15. Funded as part of the Manchester International Festival, the disused sawmill in Salford was transformed into a belts and braces urban agritech demonstrator with growing inside and outside of the building. Its X sqm rooftop greenhouse was a very cost effective aluminium pipe and diffusive plastic sheet affair with two nutrient film technique (NFT) hydroponic tables running its length, growing salad crops for sale in the wholefood market on the ground floor. Unfortunately, infighting shut it down leaving Salford with a small but significant outstanding debt.

Existing UK rooftop greenhouses tend to be for research purposes. Their lack of web presence suggests they'd rather not be noticed but there are a few in the pipeline worth mentioning that seem to suggest we're finally waking up to the idea.

The Camden Goods Yard development on land previously occupied by the Morrisons big box store, taken to an approved planning framework in 2017 by Barratt London and sold to Berkeley St George who is currently delivering it on site, has a large 1,580sqm rooftop greenhouse farm within its programme. Initially conceived of as a chilli farm, the exact details of how the greenhouse will be operated when it opens in 2025 are being developed but the concept has become the scheme's crowning USP.

Curl LaTourelle Head Architect's Staples Corner Urban Farm conceptual masterplan resurrected the food production heritage of the Strategic Industrial Land (SIL) site where the North Circular intersects the M1, and translated it for the current technological paradigm. Hectares of productive greenhouses metabolically integrated with adjacent housing, industrial units and the Brent reservoir would exchange heat, nutrient and energy to optimise for energy efficiency and

circularity. The proposal included an agricultural training centre, acknowledging the importance of reversing the critical loss of agricultural skills in the UK after decades depending on cheap foreign labour.

The author's consultancy, Architecture & food is also working on a 3-floor extension to an affordable artist studio block in Clapton whose rooftop will host (assuming everything goes to plan) London's first publicly accessible hydroponics school offering blended learning courses for prospective urban farmers. If successful, we hope to expand to at least one school in every major city, offering that one place where, if you ever feel you need to, you could learn how to grow-your-own using technology.

The conditions of relevance are here

Brexit, Covid and the Climate Emergency should already be enough incentive to kick us into gear.

BREXIT

According to Professor Tim Lang and Victoria Schoen back in 2016,

"The post-Brexit food world will be characterised by volatility, disruption and uncertainty. Food import costs will rise if the price of sterling falls. UK exposure to world commodity prices and competition with large trade blocs would rise."

Frictionous trade leads to higher prices which eventually leads to unrest. Building up our own indigenous food production capacity could alleviate this. We may need to limit our choices to what our climate, technology and skill base can provide but we should also acknowledge how spoilt we've been with bananas costing 23 pence.

Meanwhile, enduring food system pathologies persist. 30% of adults aged 19-64 years and 10% of boys and 7% of girls aged 11-18 years meet the 5-a-day fruit and vegetable recommendation. Obesity continues to rise with the WHO projecting 74% of men and 64% of women in the UK to be overweight by 2030. Levels of food waste still remain an unwavering embarrassment and the power of retail multiples remains unchallenged. Urban populations involved in growing or at the very least, see food growing, tend to adopt wiser eating patterns.

COVID

The Covid-19 pandemic highlighted two important questions; firstly, under the immense pressure of an existential threat, what does "lockdown city" feel and look like? What are the

minimum viable components of a life in the city? We all have our own individual responses but I can't help thinking that this time we were lucky. Our supply chains for fresh produce proved resilient and continued unabated but this Author's dystopic mind was never far from imagining what a more virulent threat might be capable of. If we were to be confined for long periods to our homes with even more limited access to markets, the far flung logistics for everything we currently depend on would not be fit for purpose.

Profitability/Social value/Ecological value

As with most things in life that are worth doing, a generative roofscape will require a great deal of thought, commitment and imagination. The kind of products one might grow in a greenhouse and easily sell locally are already available via an industry that has matured since the 1950s. There are opportunities in introducing heritage varieties through boutique growing operations for which markets will need to be created. Though unlikely to be affordable in the short term, technology is marching towards a paradigm of greater automation that will eventually erode that time and physical commitment such that when R2D2 harvests your week's tomatoes, you will wonder why we every shopped for high perishables from far away lands.

So what can you do? - GROOF

The Author is an external consultant to GROOF, an EU Interreg NWE-funded collaborative research project based out of Luxembourg defining the state of the art of the rooftop greenhouse concept. In September they announced a call for new-build or existing building projects with a greenhouse element in the UK, Ireland, Holland and Germany, to which they will be offering a year's worth of specialist coaching over the following 18 months. If you have a building project and are already considering integrating a greenhoused component, we are here to help and bring to bear experience accrued over the construction of four pilot projects and the coaching of a further five. If you would like to know more, please see the following link and contact the Author at oscar.rodriguez@architectureandfood.com. <https://www.urbanfarming-greenhouse.eu/>

Next... Facades

Stefano Boeri's "Bosco Verticale" in Milan revealed how significantly more interesting it would be to dress our buildings with living, oxygenating, temperature-regulating, dynamic materials than the panelised systems we all quietly know won't last their warranty period. So once we're done with rooftops, maybe we move onto facades?



15-minute City: restoring connectivity



Martha Grekos
Director (Barrister)
Martha Grekos Legal Consultancy Limited

Cities should work for everyone. Everyone living in a city should have access to essential urban services within a 15 minutes walk or bicycle ride from their home. A good place to live, work and spend time where the essentials of daily life are within a gentle 15-minute walk or cycle ride rather than a drive away: that's the fundamental principle of the 15-minute city concept.

This is not a new concept. Jane Jacobs, whose most famous book 'Death and Life of American Cities' was first published in 1961, inspired the 15-minute city and this book and her theories are still used by global city planners today. She believed that urban renewal and regeneration had to be focussed upon the needs of people. People (whether as residents or as businesses) would more readily move back into cities if provisions were centralised around them. In turn, more people living and working in cities made the cities feel safer and more appealing, thereby leading to greater demand for space from all types of businesses. She believed that proximity was the key to making urban centres vital again and that providing all amenities locally to city centre residents created renewed senses of civic pride and the feeling of an urban neighbourhood.

Living through lockdowns has made many Londoners more aware of the lack of access to green spaces, distance to essential amenities such as shops, and the need for better pedestrian and cycling options. When we also add that more people are now working from home but also many have turned their attention to local co-working hubs that enable individuals to collaborate under different circumstances, are making use of local shops and services but also have increased their spend on online retail shopping (we have seen high-street shops close and sit empty), our local cities now need to reinvent themselves in the light of all these accelerating trends so to provide that resilience and flexibility. The 15-minute city concept, when reintroduced in 2020, was something people could relate to. They knew what it meant and how it benefited the community. People accepted the change wholeheartedly. From widened sidewalks and expanded bike networks to outdoor



dining in space once used for parking, elements of the 15-minute city continued to help manage the impact of COVID-19 in many places globally. The pandemic also gave us a taste of what life could be like with an urban model that enables shorter or fewer commutes, more time for our family, friends and the things we enjoy, and greener, more walkable neighbourhoods. The 15-minute city approach therefore offers a way to build on positive changes to boost local economies and deliver lasting health, wellbeing, equity and climate benefits. Urban planning is now about fostering a flexible social and functional mix to ensure a better quality of life while keeping people at the centre.

This duty now falls onto the urban planners. It is access, not mobility, that should guide urban planning decisions. A successful 15-minute neighbourhood is 'complete' with core services and amenities that residents can easily walk or cycle to. This includes community-scale education and healthcare, essential retail like grocery shops and pharmacies, parks for recreation, working spaces and more. Many cities include neighbourhoods that deliver this, but they tend to be concentrated in central or wealthier areas. Equity and inclusivity is central; a 15-minute city strategy must emphasise equal access to services, amenities and green space. This means designing approaches to actively reduce – and not risk compounding – social divides and inequalities.

It wasn't until the turn of the 21st century that developers began to invest in creating brand-new urban villages in central London locations like King's Cross and Paddington, both previously neglected neighbourhoods blighted by proximity to major transport interchanges. But we do not need such major regeneration to make our local cities sustainable. Small interventions, such as more greenery or improved walkability, can have a profound impact on a city's resilience. Even rewilding projects and creating parklets and maximising the opportunity for play (e.g. playful bus stops or reusing existing infrastructure after hours) can provide some respite from grey concrete and tarmac. This not only improves people's physical and mental health and wellbeing but it also helps to make cities more resilient by providing natural flood defences, creating cleaner air and reusing current infrastructure. Planners must also make sure that public transport is not simply replaced with cars, but instead improve the city's walkability and cycle lanes. If we build in higher levels of walking and cycling, London communities can take a vital step towards delivering the zero carbon goals that many boroughs have signed up to as part of declaring a Climate Emergency. Introducing trees to provide shade and amenities such as more benches and public toilets can also make a huge difference. All this not only helps reduce air pollution, but a more walkable neighbourhood also creates a sense of community, building ties between neighbours.

The pandemic has shown the interdependencies of hyper-local living, place-based solutions, and social and economic resilience. Polycentric cities could help regenerate high streets and repurpose monocultural zones that currently have a singular function, normally based around office hours. They would need to provide multifunctional shared spaces that complement flexible lifestyles and providing digital connectivity that stimulates local productivity. This, coupled with road reallocations, better street space and greater provision for active travel, would support a more inclusive, community-focused economy. We need careful planning in creating diverse yet self-sufficient communities. Distinct features, including housing, employment, food, recreation, and amenities, should be accessible without dependence on cars.

In the last decade, London has added almost 1.1 million people to the city. That means it accounts for one in every four people added to the UK's population. Despite the stagnation of growth over pandemic recovery period, London's population is still projected to increase over the next 25 years. Therefore, we have seen greater emphasis within planning and design strategy to accommodate this growth to create a city for all. The Mayor of London's 'Good Growth by Design' guidance sets out 6 core pillars: 1) setting standards, 2) applying standards, 3) building capacity, 4) supporting diversity, 5) commissioning quality and 6) championing good growth. This initiative accompanied by The London Plan 2021, highlights a shift in policy to target good growth. Creating successful and sustainable growth in London requires a greater balance of spatial efficacy including higher density, mixed use development and social prosperity within local communities. If COVID-19 has taught us anything,



it is to be equipped for the uncertain. We have to create resilient and adaptable cities to meet the changing needs of its inhabitants through strategic targeted policy and championing innovative high quality design.

London's urban planners must use now and 2022 to make sure our city is fit for many futures. The Mayor of London said that "The 15-minute city concept invites us to imagine thriving local areas with easily accessible jobs and services; better street space and active travel; and greener and more resilient communities". I agree. Achieving a truly connected city will not be easy: significant barriers will need to be addressed and overcome such as changing any layout for retail provision if it is too sprawling; creating new green public spaces which will need development consent; working with different organisations to make sure that pedestrianisation is extended; that walking and cycling routes are created but are also not disjointed; missing uses (such as culture) need to be identified and secured; and more flexible workspaces need to be introduced. Urban planners will have to take bold decisions, have real determination but there must be by everyone involved collective responsibility.

Natural capital

— how far have we come, and where are we going?



Mark Russell
Partner, Head of Natural Capital
Carter Jonas

Farming is teetering on the precipice of change. But are we still waiting or has the starting pistol already been fired?

Change is coming. We don't know the rules of the game yet, and we can't be sure who the winners and losers will be. But the one thing we know for certain is that natural capital is going to be the currency in this new world.

At its most basic level, natural capital refers to those naturally occurring assets that provide a benefit for the environment, the population or the economy. So, for the environment this covers clean air and water, soil quality, trees, flood prevention, and much more. And for the public, providing footpaths and offering access to parkland are just two examples.

Most of these things inevitably involve farmers and landowners, who will need to be incentivised to shift their focus away from food production and towards environmentally friendly or publicly beneficial activities.

Last year the government published its consultation into ELMS and an Agricultural Transition document. If you read both together, you get the sense that politicians want a wholesale change of approach. They're trying to push a cohort of farmers out the door so they can bring in a new generation of land managers who buy into an approach to the land that is not about commodities. The big problem with this is that policy makers will need to throw an awful lot of money at it in order to change it from one thing to another.

Love thy neighbour

With the Environment Bill stalled in the House of Lords, key information and clarity is missing on some important topics.

So, to ready themselves for change, I'm advising my clients to start with thinking about what you want to be doing in five years' time. If it's farming, you may not need to do anything other than make sure you're talking to your neighbours, as I believe that those who undertake a landscape-scale scheme will benefit most from ELMS.

If I had very productive land, I don't think a new environmental scheme would stack up financially, but I would be forming a farming cluster because it's that partnership that will be attractive to the top tier of ELMS.

Farmers and land managers should also consider that the different potential approaches will not always complement each other. The way that environmental services are being portrayed at the moment is very black and white but taking a hectare of land and making it as biodiverse as possible is very different to taking the same hectare and trying to create as much carbon capture as possible. If you wrap public access into it, that works against biodiversity - they're almost exact opposites.

Then you get all these overlapping policy-based requirements because different organisations — water authorities, Defra, private companies — will pay you for different things.



Turning a problem into an opportunity

Public access has always been a thorny issue with some landowners who, while welcoming people to the countryside, are often the ones left counting the cost of littering, livestock worrying, gates left open and walkers straying from paths.

The problem, along with the new natural capital agenda, is leading some landowners to develop ventures involving the public paying to access private areas of farms and estates.

Dog walking fields offer secure, fenced access for paying members of the public during daylight hours. Other landowners have put in place 5km circuits which are available via club membership, or created bike loops around the edge of a farm.

For those who own land close to conurbations, there will be opportunities to grant access to land in a controlled manner that adds an income stream to the business. That could make use of land which doesn't generate huge returns currently but appeals to the public who want to walk, picnic, cycle or simply enjoy the surroundings.

They could also consider biodiversity net gain, whereby landowners can be paid for helping deliver the required uplift in biodiversity on new developments. A client of mine on the outskirts of Epping, where 12,000 new houses are required locally, is in a good position to benefit from this – and they can make this work for the wider estate, including reinstating parkland which will further enhance the experience for clients of their wedding venue business.

Turning to trees

Opportunities for landowners looking to plant trees for either private carbon sequestration agreements or to create forests are growing too.

Woodland planting schemes have recently been announced, designed to be flexible in order to allow landowners to create woodland that meets their own objectives, as well as those of the government – with smaller minimum areas and stackable contributions helping to make it possible, and to be financially viable.

Opportunities flowing from water

Flood prevention is perceived as a significant public good by the Government and could allow farms and estates near villages and towns to tap into funding to help protect homes and businesses by holding water upstream.

Separately, water quality is being tackled by groups. Efforts are currently very region-specific, but similar schemes will be drawn up across the UK.

Looking closely at the need to ensure 'nitrate neutrality' in the developments across the Solent region, the latest figures suggest that as many as 10,000 residential units are unable to come forward. In some instances, third party land has been acquired by local planning authorities and 'banked' as a nutrient sink, to which developers can make a contribution.

Whilst we await the finer details on what ELMS may hold, you may not feel confident in making big decisions about the future of your holding, but what you can do is explore your options so that, when commercial deals come along, you're ready to take advantage of them.

Putting food on plates

But what about those who just want to focus on food production? That side of things is going to be more driven by what consumers demand from their supermarket-labelled food.

There is still a market for the cheapest chicken on the shelf. But more consumers want to know about the provenance of their food.

Making a profit from food production can only get more difficult, with the cost of production going up. Unless there is an increase in food prices, the profitability is going to erode, so the only way businesses will be able to generate a profit from food production is by getting bigger.

Farmers considering moving away from food production need to consider the impact that will have on agricultural property relief for inheritance tax.

First steps

What should your next steps be, if anything? Well, if there is a private deal to be done on your farm's marginal spaces, I would do that now, but build in flexibility to the deal you agree.

I would hold off on any wholesale changes until I'd had outside advice from an adviser (such as Carter Jonas) whose job is to understand all the interactions and pressures. It doesn't hurt to start those conversations now. It's a journey, not a quick decision.

Green Opportunities

— How Nature Can Work for Landowners and Investors



Colin Bathgate
Trainee Solicitor
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Over the last 18 months the Covid-19 pandemic dominated our lives, however as always, the climate crisis was lurking in the shadows. The forum of debates moved online, but ideas and approaches to “Nature Based” land management strategies were discussed with increased fervour. While controversial, nature based land management seeks to return land to its ‘natural’ state. It is often referred to as ‘rewilding’, however there is a distinction between writers such as George Monbiot who propose widespread re-introduction of species with little or no management of the land, and modern rewilders who argue that custodianship of the land continues to require attention.

While the movement is controversial, it is undeniably gaining traction. In November 2020 an online webinar hosted by Savills and the Cambridge University Land Society was attended by over 600 people. With the UK and Scottish governments respectively promising to protectively designate 30% of land by 2030, and achieve net zero emissions by 2050, nature-based strategies are being thrust into the mainstream political discourse. It is no longer considered a fringe movement for

radicals, but rather a serious contender in the approach to climate change: and offers commercial opportunities for landowners. For example, the UK government has pledged to require quoted UK companies to disclose climate data by 2025, and 92 of the FTSE 100 companies already disclose their climate data, a future market may develop whereby landowners are paid in an offset type arrangement that goes beyond the current emissions trading model.

Nature Based land management practices covers a wide spectrum of activities, however this article will touch on two of the significant activities, namely carbon capture, and diversification that can take advantage of the ‘rewilding brand.’

Government Grants

As with traditional holdings, landowners that embrace Nature Based management approaches are entitled to government grants. The eligibility for these grants depends on the nature of the land management strategy.

In order to encourage Nature Based approaches, the Scottish Government has established the Agri-Environmental Climate Scheme framework. This framework provides payments for landholdings that support biodiversity, flood mitigation, organic farming, historic assets and importantly, woodland and peatland creation. These last two categories are funded to reduce greenhouse gas emissions and securing carbon stores in peatlands.

Private Funding

Alongside the traditional government funding model, Nature Based approaches can also take advantage of the burgeoning carbon credits market. This is where companies either directly purchase land or pay landowners to

‘capture’ their emissions and thus reduce their carbon footprint, gaining carbon credits to offset emissions.

For landowners, the carbon capture market presents an interesting alternative revenue stream. Landowners are paid per tonne of carbon offset. At



present, the market is burgeoning, but already presents a sustainable revenue stream. Due to the nature of the product offered by landowners, long term partnerships can be entered into thus ensuring the financial well-being of an estate. At present there are two types of carbon credits available; verified (or Woodland Carbon Units called WCU) and promise (or Pending Issuance Units called PIU). WCUs are credits currently underpinned by a framework have a floor of £22 per tonne but have gone as high as £50.23 per tonne.¹ PIUs are sold for the promise of offsetting future emissions, and are currently trading at a lower level to verified credits at around £15. In the event of any legislation capping emissions for companies we can expect these prices to surge.

Examples of frameworks for the sale of credits include the Woodland Carbon Code, managed by Scottish Forestry, and the Peatland Carbon Code administered by the International Union for Conservation of Nature UK (IUCN UK). Both of these frameworks set standards in the production of carbon credits in their respective areas, with certain verifiable obligations to be met by landowners. This enables consumers to have confidence that what is purchased is effective, but can enable

landowners to charge a premium for their product as it is verified and underpinned by an external body.

Associated businesses

Environmentally conscious landowners have also witnessed handsome revenue streams from Nature Based land management practices. Weekend breaks branded as wilderness retreats facilitated by the charity, Scotland the Big Picture, were proving successful prior to the recent lockdowns. Furthermore, companies such as Highland Boundary Spirits and Liqueurs, Birkentree Birch Water and Forest to Fork wild venison, offer examples of how 'rewilded' estates can diversify into areas that cash in on the rewilding brand.

While nature-based land management practices are certainly not for all landowners, they are also not commercial deserts. For the right landowners or investors this presents interesting opportunities together with environmental and commercial sustainability. There are doubtless a great deal more ideas coming in the future, but these are amongst the plethora of approaches that can be taken at present.



¹ David Sheppard and Camilla Hodgson, 'UK Carbon Price Trades at £50 as Market Opens for First Time' Financial Times (London, 19 May 2021).

Innovation in the rural world



Oliver Harwood MA (Cantab) FRICS
Chairman of CULS Rural Forum
Partner, RH & RW Clutton

Farming and Land Management has always been at the forefront of innovation, with advances in plant breeding and technical achievements being adopted by forward thinking enterprises aided by knowledge transfer.

Sheep producers now regularly sex their production in utero, and the most advanced have installed sheep conveyors which move sheep in single file and weighs, pregnancy scans, and records other data from them such as lambing traits, enabling the performance of routine treatments and drenches - identifying them by their electronic ear tag.

Cattle farmers are experimenting with feed to reduce methane emissions from the rumen (interestingly a greater proportion of methane is emitted from cows belching than from their manure), while others are doing embryo transfer to select the best genetics in their herds.

Dairy farmers have employed robotic milking for some years.

And in arable production technology (while denied GMOs it appears possible that Gene Editing will be permitted) leaps on by bounds.

On a Sussex Estate I manage the share farmer has invested in GPS cloud based knowledge driven production. With min or zero till on moderately productive land, each square metre has been yield mapped and the sprayer uses this knowledge to accurately pin point delivery of crop protection products that have been engineered to deliver maximum efficacy with minimum environmental impact. The GPS tracker keeps the sprayer located to within millimetres of the target, and this accuracy reduces the amount of product needed by more than 30%.

This is driven by the data from the combine harvester which is linked to the same system. Smart data offers functionality and helps avoid pouring unnecessary resources into areas that ultimately don't reward it.

The yield mapping has enabled us to select the areas of the farm that can be put to habitat creation without loss to farm output, a major win for biodiversity. The Sussex Wildlife Trust was recently employed to assess the biodiversity of the farm and found over 800 species (including a number on the Red List) were thriving on the farm.

Precision agriculture has seen extremely rapid growth over the last few years. Between 2018 and 2023, the global market value is expected to almost double from approximately £3.89 billion to £7.30 billion.

While this is a success story, the rate of yield increases across UK farming have been flat of late. Farming has suffered from the regulatory constraints applied to gene technology by a worried public, and the EU regulatory approach based on the Precautionary Principle.

When I was at the University, the UK Pesticides Safety Directorate worked on the basis of proven harm using a risk matrix when assessing products. This helped fuel innovation and a golden period in the 1960s and 1970s when British farmers were

able to increase yields year on year. (and this was sustainable yield based on crop genetics and crop protection, rather than removing hedges)

In my view, we must harness all the tools of innovation technology, R&D and the life sciences to deliver the food a growing world population needs at the same time as massively reducing our carbon footprint and ensuring a better environment.

I think it would help if we went back to evidence-based regulation rather than the Precautionary Principle (under which the invention of the wheel would likely have failed a safety analysis). In July 2018, the European Court ruled that any and all mutagenesis breeding technologies should be regulated as a GMO, except those with long history of safe use. Defra recently closed a consultation on Gene Editing which may offer a potential way forward. As the NFU says

"A very broad range of products with market-oriented traits are being developed, and not only those with agronomic traits - such as yield and disease resistance - but also ones with consumer-facing traits, such as lower allergenicity, high anti-oxidant, longer shelf life, vitamin enhanced. There are also those with climate-resilience traits, such as drought and salt tolerance".

We should not deny UK consumers and producers the undoubted benefits of these advances, and we should go further, enabling a flowering of innovation in all areas of the rural world.

Defra is at the start of a journey towards new support mechanisms, and plans to offer innovation grant aid, while those (very few) farmers who are incorporated (most are sole traders) can benefit from R & D tax relief: it would be good to see this benefit extended to the wider industry.

There are many challenges ahead, (not least Climate Change) but UK farming has risen before, and can do again, to meet them.

Promoting Adaptation to Changing Coasts



Dr Samuel Bridgewater
Head of Wildlife and Conservation,
Clinton Devon Estates

This article presents a new coastal climate adaptation initiative called *Promoting Adaptation to Changing Coasts* (PACCo). Developed as a partnership project between the Environment Agency, landowner Clinton Devon Estates and the Conservatoire du Littoral (France) the scheme will adapt two case study sites either side of the channel to climate change. These are the Otter Valley in Devon and the Saône Valley in Normandy. The initiative has a total value of €26 million, with €17.8 million coming from the Interreg VA France (Channel) England Programme. Financial support has also been provided by the Environment Agency due to the restoration and adaptation of the lower Otter valley providing compensatory mudflat and saltmarsh to replace that which will be lost over the coming decades on the adjacent Exe Estuary. This loss is being caused by sea level rise acting against existing hard-engineered existing flood defence schemes and future schemes planned to protect thousands of homes.

The lower Otter and Saône valleys have been heavily modified by human hand over millenia and are facing significant environmental and socio-economic impacts resulting from climate change, including sea level rise. The PACCo initiative aims to demonstrate that climate change is threatening many coastal areas, that adaptation will be necessary and that early adaptation is far better and far cheaper than late action or inaction. There remains a lack of project exemplars which clearly quantify the benefits and costs of climate change adaptation. A key output of the initiative is a guide (the PACCo Model) that will show how the risks and opportunities associated with climate adaptation can be evaluated. It is hoped that this will help other coastal communities assess whether adaptation is right for them and if so, how to proceed. Over 70 estuaries in southern England and the north coast of France could benefit for taking a similar approach

PACCo will help address a number of high priority actions put forward by the Climate Adaptation Summit in 2021, namely that globally, society needs to greatly accelerate the pace of climate adaptation, that partnership working is critical if we are to achieve the greatest amount of gain from adaptation and that we need to improve knowledge transfer of what does and does not work. Increasing the speed of adaptation is one of the four main goals of COP26.

Looking northwards from near the mouth of the Otter estuary across Budleigh Salterton cricket club after a period of heavy rain. Water is trapped behind the embankment and can't re-join the river or escape easily to sea.



In our island nation, nowhere are the impacts of climate change so keenly felt as around our coasts and our coastal regions will be radically transformed by climate change over the coming decades. Change of our coasts is nothing new. For millions of years, coastlines have been changing due to erosion by the sea. For thousands of years human activity has also altered coastal areas. Settlements and sea defences have been built, and wetlands drained and reclaimed for agriculture and infrastructure including roads, sewage treatment works, refuse tips and recreational facilities have been built, most placed in areas which were formerly floodplains. This has resulted in societal benefits but has come at an ecological cost. Modified estuaries are less natural and are far less able to adapt to climatic changes than natural, undrained and unembanked systems.

The lower River Otter presents a classic example of a modified watercourse. As early as monastic times the river was canalised and artificially directed to one side of the valley to power the many mills that once occupied the edges of the floodplain. Since then additional modifications have included: the building of a flood embankment in the Napoleonic era to drain and claim agricultural land from the sea, with the embankment now one of the busiest footpaths in Devon; the building of the Budleigh Salterton to Sidmouth Junction railway line which runs up the floodplain and operated between 1897 and 1964; the construction of a road that runs at right angles to the floodplain; an unprotected old municipal tip site built within the floodplain that operated between 1928 and 1978; the establishment since 1934 of Budleigh Salterton Cricket Club which occupies the part of the floodplain closest to the sea. This type of modification is mirrored in estuaries around our coastline.

Rivers like to flex their muscles and meander across a valley floor. The River Otter no longer has room to breathe and in its lower reaches is entirely disconnected from its floodplain. Flood waters get trapped behind the railway line, the road and the embankment and cannot re-join the river. As a result it flows over agricultural land, the road and around and over the old municipal dump to accumulate eventually at the site of the current cricket club. The primary drainage of the valley behind the embankment is through a trunk drain that runs under a car park and via a pipe through the shingle bar beach out to sea. Its outfall is below the high tide mark and is frequently covered by shingle deposition from longshore drift.

Emergency repairs to the embankment made in 2018. The embankment was within one tidal cycle of a catastrophic breach.



Since its construction over two centuries ago the main embankment has required constant maintenance and has breached multiple times. In 2018 it was within one tidal cycle of catastrophically breaching again. Only the very significant public expenditure prevented this from occurring. In the past society's approach to flooding has been to direct ever more money at such a problem - usually involving 'holding the line' to keep water out. Such an approach may well be justified for areas where homes and businesses are at risk but at other sites societal adaptation and allowing the sea back in to reclaim our estuaries may be the better and more sustainable way forward.

Human activities are estimated to have caused 0.8°C to 1.2°C of global warming above pre-industrial levels. Warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. In the UK the sea level has risen 16 cm since 1900. This trend is set to continue, with the sea level predicted to rise between 1.01 m and 1.35 m between 2017 (base year) and 2117. This is highly significant. Based on this evidence and the fact that continued investment in repairs in the lower Otter valley cannot be justified as there are no settlements that will be flooded, there are only two realistic future scenarios of the Lower Otter Valley. Both involve the return of the sea. The first scenario is a managed transition to intertidal habitat with the Cricket Club, South Farm Road, the tip, the embankment and paths either moved or protected to the best of society's ability and key species and habitat losses mitigated. The second is an unmanaged transition to intertidal habitat with none of the above protections in place.

For the River Otter the scheme's original question posed a decade ago was: *Can we re-connect the river to its floodplain, recreate the nature-rich intertidal habitat that occurred in the estuary several hundred years ago and attain more sustainable management of existing infrastructure in the face of a rapidly changing climate? Could we, and should we, consider the drastic pre-emptive action sometimes referred to as 'managed re-alignment'?* Since 2009 the benefits and disbenefits of adopting this approach has been evaluated and consulted on for this site and on balance the approach has been found to be desirable. This resulted in the submission of a planning application to proceed in 2020 with permission granted in January 2021.

To achieve its aims the scheme will: create a 70 metre breach in the embankment that currently separates agricultural land and Budleigh Salterton Cricket Club from the river and estuary with the breach bridged to allow continued access along the South West Coast Path; re-align and raise the valley road that currently floods frequently and which serves as the primary access for a small community; protect from erosion the old refuse tip which currently presents an environmental liability; relocate Budleigh Salterton Cricket Club to a new site outside of the floodplain. An additional benefit will be the creation of approximately 55 hectares of mudflat and saltmarsh and the creation of a new wildlife reserve of international conservation value.

Adaptation is hard and many hurdles have had to be overcome during the development of this scheme and will have to be overcome elsewhere if similar projects are to be progressed. Technical difficulties have included ensuring: that the scheme does not cause the salination of a drinking water abstraction borehole; that the project does not increase flood risk to properties and businesses; that tenant farmers will be fairly compensated for any land lost; that a new ground is found for the cricket club; that the tip site is adequately protected from erosion; that public rights of way, including along the embankment are maintained; that an existing sewage overflow pipe is protected or re-routed; that a suitable solution for a road is found so that it doesn't become tidal; that the anticipated habitats for wildlife, including for wading birds will be created.

However, perhaps the greatest challenge has related to public engagement around the theme of climate change. Adaptation at this site will result in very significant landscape-scale change. Change is often difficult for humans to accept. In the case of the lower Otter valley it means a transformation from a familiar and much loved pastoral landscape that is green... to one that is dominated by saltmarsh and mudflat. Not surprisingly the scheme has always had its supporters and opposers and the scheme is currently at a sensitive stage with vegetation clearance being an essential first step before works can begin. Many people are grieving the loss of the familiar

habitats that currently define the landscape and the very real wildlife and other societal benefits resulting from the project have not yet been experienced. We are asking for a leap of faith and a critical part of the project is setting up a monitoring framework that will evaluate in the long term the changes to the environment and the local socio-economy. It will only be ten years hence that we will know whether the scheme has truly been successful in achieving its objectives and has delivered what it has promised and adaptation projects need to be honest and objective about communicating what has been gained...and lost.

There are a number of key engagement questions that need answering if as a nation we are to adapt to climate change at the pace required. These include: What is the best way to communicate to communities about the threats of climate change? When and how do you consult with local stakeholders about adaptation? What is the best way to adapt with societal support? To this end over a decade's worth of consultations, stakeholder group meetings, planning comments, social media commentary and newspaper articles related to this scheme are being analysed by Exeter University to see what has been done well, and what could have been done better and where the conflicts arose so that others that will need to take the same journey can benefit from our experiences.

The last act in this initiative is the breaching of the lower Otter embankment. This is scheduled for March 2023 when the sea will once again be allowed to occupy much of its former inter-tidal extent. Adaptation is difficult – both the acceptance and the 'doing' of it. But we need to address head-on the problematic issues that result from a consequence of a history of modifications to our estuaries and investigate if adaptation can bring multiple benefits for society. We hope that in due course the lower Otter Valley and the PACCo initiative will become models for climate change adaptation and environmental and socio-economic enhancement that others can be inspired by.

Thanks are due to Clinton Devon Estates for the contribution of this article.



Looking northwards up the Otter valley across South Farm Road and the fields that will be flooded by the tide. In the middle left of the picture it is possible to see the works being undertaken to assist with the development of a creek network.

Sleepwalking along, whistling a song



Lord Richard Inglewood
Hutton-in-the-Forest
Trinity (1969 – 1973)

One of the points of Brexit was to remove the U.K. from the ‘corset’ of EU systems which surrounded our domestic governance which in turn constrained the ability of this country unilaterally to pursue its own agenda in the way it best saw fit. Clearly this process is underway.

Nonetheless this does not mean that economically and politically we do not live in an interdependent world, albeit some might say less interdependent than a few years ago and hence in practice this country is not able to do exactly just what it would like all the time. Even North Korea, no role model, can do that. In reality countries are constrained by the Real Politics of the wider world and the international agreements that flow from them which need to be adhered to.

Against such a background it is necessary for this country, including for that matter the Devolved Administrations, to have some kind of idea of the direction of travel its policies are taking us all. Nowhere is this more true in respect of what I shall describe as ‘Non-Urban’ Britain which represents the bulk of the land surface of this country.

Clearly in the days of EU Membership much of this was determined in a pan-European framework – it is important to mention the CAP was not, as is often wrongly supposed, a single identical and homogenous policy, rather it contains flexibilities. On the other hand in parallel land use policy has always been a Member State competence. As for the CAP, the European perception of how rural society should work, tempered to some extent by UK pragmatism was the lodestar of much policy. Nowadays agriculture, *prima facie*, is a British political competence, and the important question now that Brexit is done and that we are, I hope, leaving the COVID 19 Pandemic is ‘What is the countryside for and following on from that, how will the vision be achieved’.

As I see it the problem is that there is no coherent view of what is sought. For example, you have only got to look at the debate about house building to see the extent of disagreement among those in ‘high places’. Another instance is the political debate around the domestic implications of the Environment Bill where widely different ideas are espoused not merely by political opponents, which is hardly surprising, but by close political allies, and the same is true about food production and food security.

In an open marketplace where Adam Smith’s ‘Invisible Hand’ determines the allocation of resources and hence what happens this may not matter. However, agriculture and these days wide ranging environmental rural policy is far from a free for all. It plays out in a very regulated and controlled marketplace. In fact this has been so for many years, and is in my view unavoidable these days and hence the matter must be addressed. The problem is that the State, which fulfils the role of the Regulator in Chief is apparently collectively clueless and contradictory.

There is no consistent set of ideas for the future. Furthermore, the parlous state of the public finances and their expenditure founded on short termism because of cash flow requirements means that the resources to effect change may well not be there. All change costs money and rural change is no different.

The idea that leaving the CAP would release funds for other things was always an ‘Idea for the Birds’. New rural / agricultural / environmental policies, which are inextricably now one and the same thing, will cost everyone more, not less, if they are to work properly, and there is not much financial resilience left in the real rural community to carry the slack.

It is interesting too how the debate about Natural Capital is developing in the context of wider agricultural/environmental policy. There seems to be widespread agreement that it is both important and needs to play a central part in the revival of the rural economy which itself needs to be part of ‘Levelling Up’. There is very little analysis of how all this might actually happen away from the pages of often unrealistic economic monographs. It certainly can’t come free. Just to give an example, what is required is an understanding of the financial implications of using land for trees which provides appropriate return on the invested capital and the labour necessary to do the work looking after them for years. It is too frequently forgotten that those who work doing this need to have a house to live in, may well have a family, and generally need to eat to survive and have a legitimate expectation

of being economically integrated with the rest of society. This kind of thing is invariably brushed under the carpet and left unanswered, yet in its own way the rural community is as important to the future environmental condition of the country as the N.H.S. personnel is to the National Health. What matters in this context is long term sustainability not the relatively capricious incidence of wind-fall profits and profit based on trading assets not husbanding them.

The pressures these economic forces are placing on rural England are beginning to bite making a number of traditional sectors increasingly economically unviable, regardless of their wider social and economic importance. For example, now in N.E. Cumbria there is a strong demand for land from forestry companies and very little if any from farming. This may or may not matter, but one of its consequences is that privately owned property is becoming corporately owned property in exactly the same way as has happened in the High Street of many market towns. It has a substantial impact on rural society.

Something similar I suspect is likely to happen, indeed it has probably already begun, in the Visitor Economy in the Lake District. This has been very severely hit by lockdown, as have similar areas. Cash reserves are depleted and significant future investment will increasingly come from elsewhere, sometimes these days China or the Gulf, and that is going to be the destination to which profits will be returned. It is a form of neocolonialism from which this country may well have been a financial beneficiary over the last couple centuries or so, and perhaps the boot is now on the other foot.

From an agricultural land perspective a great deal of the land in the Lake District is in mortmain e.g. National Trust, United Utilities, Forestry Commission etc, while in N.E. Cumbria the current direction of travel suggests forestry companies will assume the same role. Land will be owned in this way and housing by second homeowners. This is not only a UK phenomenon. What is clear is that over time those who live and work here may be squeezed out by 'off comers' because the impact of the urban dominated system of regulation and political oversight makes them uncompetitive. Land Use and Land Tenure are tied together as history clearly shows us.

Currently it looks as if rural Britain will increasingly no longer to be a place for indigenous resident owner occupiers and their businesses, while at the same time home ownership and the concept of a rural property-owning democracy is all the rage in urban and sub-urban Britain.

This may be an aspect of something which is universal both as to time and to place but we are an essentially urban nation which is becoming ever more grandiose in our aspirations for public expenditure becoming less and less affluent in the context of the Wider World. We should at least be aware of the implications of all this on what may be happening in the countryside.




Residential can be the winner of the remote working revolution



Richard M Jackson MRICS
Managing Director
Apache Capital Partners

Image courtesy of Jo Cowen Architects



With the pandemic still raging in many parts of the world, the exact impact and lasting legacy of coronavirus may still not be clear for some time. Yet there is a growing consensus that the post-Covid world will be very different from the one before.

Where there is still debate is to what extent Covid-19 has been a cause or a catalyst for change. I sit very much in the latter camp: the virus has acted as an accelerant for pre-existing structural changes being driven by longer term demographic, socio-economic and technological trends.

Nowhere is this clearer than property. Covid-19 has undoubtedly accelerated the two revolutions that were already tearing through real estate – online shopping and remote working – as lockdowns removed us from our usual physical settings and placed us in a world that was largely remote and virtual.

The dislocation suffered by offices will likely be less than physical retail. Advances in videoconferencing technology may have made this pandemic easier to work through, but there is no replacement for the creative sparks generated by an in-person meeting. Humans are also fundamentally social creatures, and for many, offices are just as much about growing their personal life as it is their professional one.

That said, there is no doubt there will be a change in demand for workspace post-pandemic, which can already be witnessed in commercial leasing activity. For the residential real estate industry, this change represents a historic opportunity.

As business activity is dispersed away from the office, the home and ‘third spaces’ such as cafés will grow dramatically in importance. Having somewhere comfortable to work, whether that is a spare bedroom in a detached house or a dedicated co-working space in your apartment building, will become increasingly valuable to consumers. So will reliable fast internet.

We have already started to see proof of this at Angel Gardens in Manchester, our flagship multifamily housing scheme with Moda Living. Leasing activity remained healthy throughout the pandemic and has accelerated significantly, with many residents drawn by the quality of the amenity provision, integration of technology and the level of services offered as well as the promise of building-wide hi-speed Wi-Fi.

From the outset, our buildings with Moda were designed with multi-functional spaces and as a result none of our assets – either completed or in the pipeline – need updating to respond to changing lifestyles as a result of Covid-19.

While the reduced role of the office means the space in your home is more important, it also makes its location less important. Fundamentally, living close to work will carry less of a premium as regular long commutes can be avoided by simply working from home. For Britain’s emerging single-family housing sector, this is a potentially powerful trend to tap into.

The investment case for single-family rental housing was clear before the pandemic, with the sector boasting compelling demographic and market fundamentals. There are currently 1.8m families with children who rent in England, and it is estimated that over half of the children born today will grow up in rented accommodation. Yet there are no family homes that have been designed or built specifically for rent.

These facts alone demonstrate the huge market opportunity and Covid-19 will likely make the potential pool of customers even bigger. As more employers embrace ‘work from anywhere’ policies, we expect demand for high quality rental housing in suburban and rural locations will only grow further, as people search for more space, greenery and change in lifestyle.

Our single-family housing platform Present Made, which we launched earlier this year, is the UK's first to develop and operate family homes designed exclusively for rent.

We are not acquiring existing dwellings or forward funding housebuilder sites like other investors, but instead delivering homes that have been purpose-built and designed for renting, set in master-planned, landscape-led neighbourhoods focused on people, not cars, to help create a genuine sense of place and community.

All Present Made homes will be highly energy efficient thanks to a combination of smart technology and modern methods of construction, with the houses precision engineered in a factory environment in a process that is less wasteful, disruptive and time consuming compared to traditional construction techniques. Targeting a net zero carbon operational model is at the heart of Present Made, where we want to create an environment and community for our residents, where living sustainably is second nature.

It was this bold innovative and sustainable vision that led to Present Made being appointed by the University of Cambridge to deliver the next set of housing as part of its ambitious 150-hectare Eddington masterplan.

Under plans that have already been submitted to Cambridge City Council, Present Made will develop and operate close to 370 rental homes as part of a new neighbourhood that will promote healthy and sustainable living.

The £160m scheme, which has been designed by the award-winning Jo Cowen Architects, is centred around the four pillars of Activated Public Realm, Community Creation, Professional Management and Talent Retention.

For Cambridge University, this last pillar – Talent Retention – is of fundamental importance. Cambridge has some of the highest housing costs outside of London, and this threatens to price out the best and brightest who are critical to the city's future growth and long-term prosperity. By providing a housing option that is attainable yet aspirational in terms of pricing and quality, and flexible yet secure in tenure, Present Made at Eddington can support the university in its mission to keep talent.

Although we cannot claim to have predicted the pandemic, as firm believers in innovation, we expected new technologies would continue to drive more flexible working patterns. As long-term owners and operators, we considered the impact that would have on the design and operations of our assets. That is why across both Present Made and our £2.5bn multifamily pipeline with Moda, there is a major emphasis on digital connectivity and incorporating dedicated workspaces into the amenity offering.

While the successful vaccine roll-out will see what many consider normal life return soon enough, it is clear there is no returning to the pre-pandemic status quo. Covid-19 has fundamentally altered our relationship with work and home, and residential – including both multi- and single-family housing – stands to benefit enormously.



Image courtesy of Jo Cowen Architects

Our

PRESENT
MADE

Time

We are delighted to support CULS in nurturing the future pioneers in real estate

Present Made builds homes and communities for people to thrive and places to flourish. Our homes are designed to rent, for the time of your life, whatever your age, in places of individual character, vitality and distinction, where living sustainably is second nature. Informed by the past, we shape the present, making homes that sustain communities and bright futures.

As the U.K's first business to design, develop, own and operate family houses designed exclusively for long-term rent, Present Made offers its residents an essential new quality of life. With local, social, cultural, environmental well being at its heart.

Present Made, 7 Curzon St, London W1J 5HG

Is

Now



Is there a **green** premium for **new homes**?



Lucy Greenwood MSc MA (Cantab) PhD
Director
Residential Research and Consultancy
New Hall, 2005

Consumer sentiment is increasing towards more sustainable 'green' homes but only larger homes achieve a 'green' premium.

Consumers are increasingly conscious of the sustainability of their homes. But it is typically still only the most affluent eco-conscious buyers who are prepared to pay more for a 'green' home. And it's only larger homes that achieve a 'green' premium. As the market is not yet able to generate enough demand for more sustainable homes, the question is how to generate the demand and cover the additional cost to build these homes. Better mortgage rates for more energy efficient homes may help increase demand. But changes to Government policy and incentives such as stamp duty exceptions could be used to increase demand, support delivery and ensure we are on track to meet the zero-carbon target.

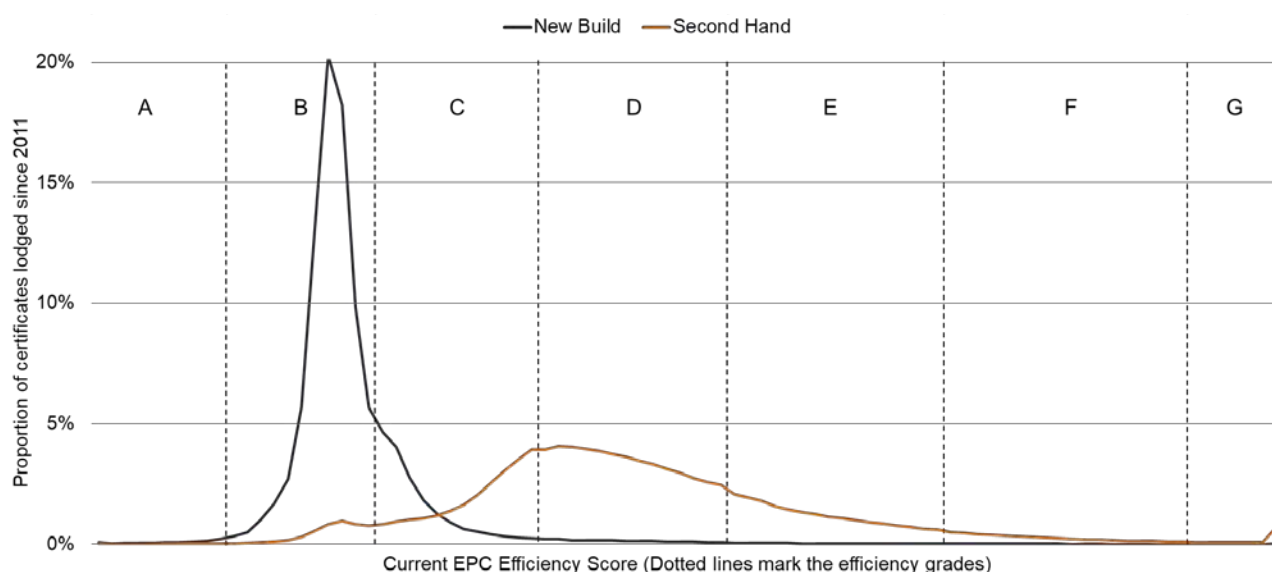
Increasing consumer awareness of sustainable homes

There is increasing awareness of sustainable products and more energy efficient homes. 49% of buyers surveyed by Savills in 2020 stated green credentials had become more important. And 29% of new homes buyers surveyed by Redrow said that energy efficiency was the most important factor in choosing a home.

But, are buyers prepared to pay for a more sustainable home? Several studies have found that buyers are only prepared to pay a small amount for sustainable features:

- A report published earlier this year by Gowling WLG found that homebuyers are prepared to pay an extra £2,800 for 'green features' with cost savings and a higher resale value being key incentives for doing so.
- Older academic research by Mandell and Wilhelmsson in 2011 found that in Sweden there is a positive willingness to pay for environmental housing attributes but lower cost features were far more appealing than higher cost ones.
- This was also found to be true in 2007 Savills research which found most UK households do consider 'green' issues to be important but few are prepared to pay more for measures that reduce environmental impact.

Figure 1: Just 1% of new homes built since 2011 are EPC A rated.



Source: Savills Research using HM Land Registry and MHCLG

Few 'green' homes

Part of the challenge in assessing whether there is a 'green premium' is that relatively few homes have been built to the highest energy efficiency and sustainability standards. Back in 2006 The Code for Sustainable Homes was launched to help reduce UK carbon emissions and create more sustainable homes. However, the code was not mandatory and very few homes have been built to the highest standards.

Only one of the 15 eco-towns shortlisted in 2008 have been built (Elmsbrook). Just 1% of both new homes built since 2011 and those sold in the last year in England and Wales were EPC A rated. Almost all were B rated, just scraping above required levels.

Is there a premium?

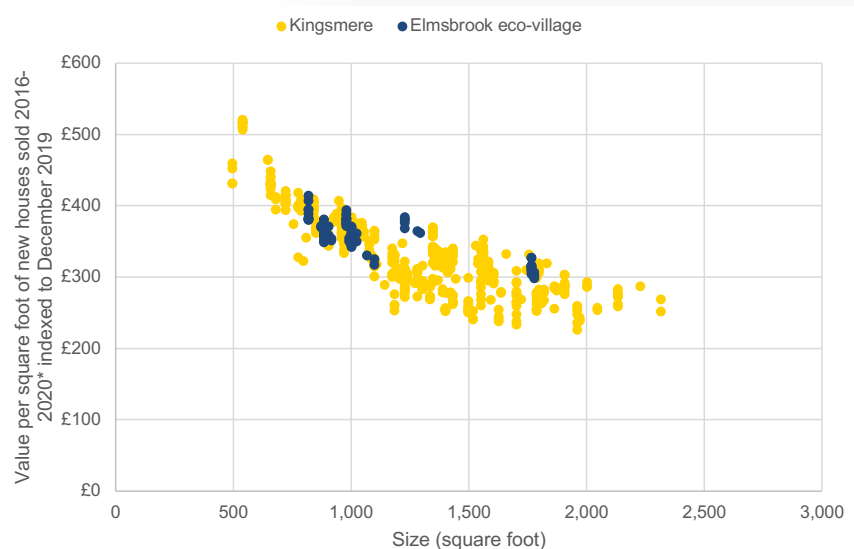
From the evidence we have at the moment, we find there is typically only a 'green' premium for larger new homes. But these premiums are often achieved as part of a wider package of high quality features. In time, as more energy efficient and sustainable homes are built we will be able to test whether a premium evolves.

To establish the premium at the moment we have considered two case studies, where significant numbers of 'green' homes have been built:

Elmsbrook, NW Bicester

At Elmsbrook, the eco-village at Bicester, the first 400 homes have been selling since 2016 and can be compared to the traditional new build development of Kingsmere on the south west side of the town. At the eco-village, houses between 1,500 and 2,000 sqft achieved an 8% premium over those at Kingsmere. Values for those between 800 and 1,000 sqft were just 1% higher.

Figure 2: Sales at Elmsbrook compared to those at Kingsmere surrounding Bicester.

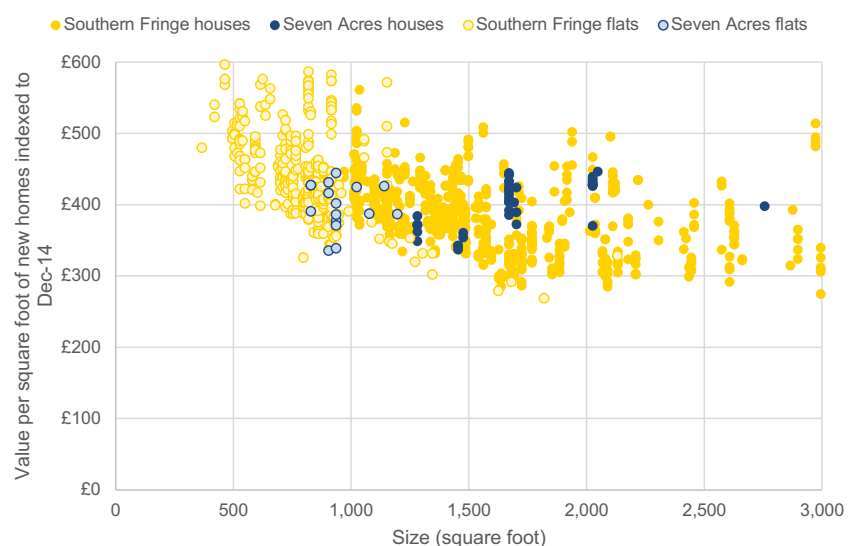


Source: Savills using Land Registry, MHCLG

Seven Acres, Cambridge

At Seven Acres, a development within the Southern Fringe urban extension to Cambridge, 128 high quality, spacious, code 4 and 5 level (highly sustainable) homes sold in 2013 and 2014. Here the larger houses of over 1,500 sqft achieved a 19% premium over similar sized homes on the wider development. The smaller houses and flats sold at an 8% discount to similar sized homes. However, this was partly because they offered larger but fewer rooms for the same square-footage than other schemes.

Figure 3: Sales at Seven Acres compared to those on the Southern Fringe in Cambridge.



Source: Savills using Land Registry, MHCLG

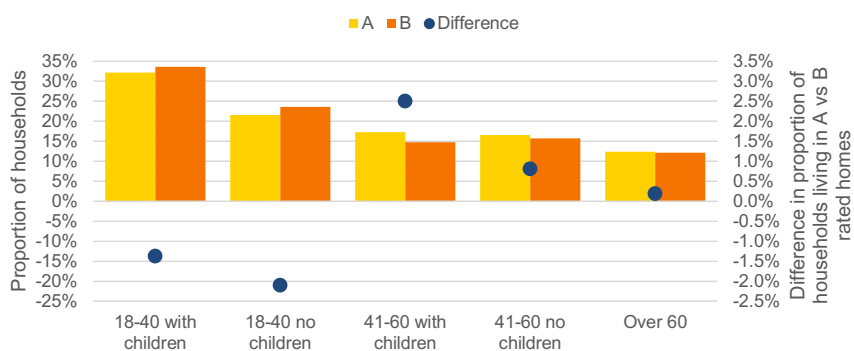
In both these examples we have controlled for location and date of sales. But the quality of the design of the home, outside space and living environment also have an effect the price paid. So the energy-efficiency and sustainability only partly contribute to the premium. This has been true on smaller developments of sustainable homes too. Here developers have also often had to accept a slower sales rate to achieve the values (and premiums) they need to cover the additional build costs.

Who buys green homes?

Due to the higher pricing of more sustainable home and the affordability pressures on housing, it tends to be the more affluent eco-conscious who buy them. As we showed in our analysis from [‘The appeal of energy-efficient housing’](#), those buying higher priced homes were the ones buying more energy efficient homes.

New analysis here simply comparing who lives in EPC A and B rated homes shows that it’s the established families (41-60 year olds with children) who have a greater propensity to live in an A rated home than a B rated one. It is this group that tend to buy larger homes (average 1,200 sqft) and have greater spending power¹.

Figure 4: The over 40’s are more likely to live in an EPC A rated home.



Source: Savills using Land Registry, MHCLG, Experian

The challenge for delivering more sustainable homes

The Government’s intention is for all new homes to be zero-carbon by 2050 and produce 75-80 per cent reduction in carbon emissions by 2025. To achieve this homes will cost more to build. The extra cost may need to be paid by the home buyer through higher house prices, the developer through lower margins and/or the land owner through lower land values.

This research has found there is a limited premium for ‘green’ homes as the pressures of affordability on the housing market mean most buyers don’t have the luxury of choosing the additional ‘green’ features. Buyers are typically only prepared to pay a small contribution (if any) towards such features even though there is growing consumer awareness of sustainability issues.

Affordability is unlikely to go away as a constraint. But it is possible that mortgage terms for more energy efficient properties, which are already emerging, will start to drive a higher premium or brown discount. Until an established premium emerges, it remains unclear whether it will be financially viable to maintain and increase levels of housing supply at the energy efficiency standards that are needed, or whether other policies and government interventions will have to be flexed. Could the introduction of a stamp duty exemption or a grant to the developer or home buyer for the most energy efficient homes be part of the solution? Similar incentives have significantly boosted the demand for electric vehicles.

¹ Savills Spotlight on Development 2020: Delivering new homes resiliently.



Like the climate crisis, housing doesn't offer any silver bullet solutions



Ryan Prince

Vice Chairman | Realstar Group
Founder & CEO | UNCLE
Leadership Counsel | Facing History & Ourselves UK

The housing crisis has a lot in common with the climate crisis: first among them, there is no silver bullet answer. In climate, wind or solar power solutions alone won't get us to carbon zero. Neither will magical technological innovations like carbon capture. We need financial instruments (like carbon tax credits), regulation, innovation and (most importantly) social awareness and desire.

Housing is no different. There is no single policy that will "solve" the problem. We need several, varying types of tenure to alleviate pressure on the system. Market-based and subsidised tenures are required for owned, part-owned and rental housing. The government and private sector must be prepared to operate like the technology sector – try new ideas, test them quickly and scale if they work. For example, the US has a category called 'workforce housing', essentially an expanded version of what was once known as 'key worker' housing in the UK. This should be a key area of focus in helping look at social equity in large cities.

Rental housing is but one of the ways to help alleviate pressure on the system. Like wind power combatting climate change, it's not a panacea. It has its own pros and cons, many of which vary depending on your point of view, but it is an essential component of the cocktail of solutions.

For the past 20 years, I've been nearly exclusively involved in real estate asset classes which are highly operationally intensive – or as we like to call them, operating businesses with real estate on the balance sheet. These have included hotels, healthcare facilities, student housing and multifamily/build-to-rent housing (BTR).

In today's world, the 'hotelisation' of real estate permeates every corner of the real estate sector. Landlords can no longer exist as faceless organisations who persuade tenants to sign 20+ year 'upward only' leases where the tenant bears 100% of the costs and landlords have little to do.

Technology has driven consumers to expect more from every product and service provider out there and the real estate market is not immune. With climate change, that means the use of alternative energy, shortening supply chain carbon footprints and pressuring corporations to change their ways of working. In renting, this means taking a step back to change the paradigm by really listening to what consumers actually want and persuading the government that owning your home is not the only way to win votes and elections.

About 5 years ago, this inevitability led me to 2 insights:

1. Everything we used to own, is converting to a product which is delivered as a service: music (Spotify); cars (Uber); clothes (Rent-the-Runway); entertainment (Netflix); and
2. Every direct-to-consumer sector has brands in order to engender trust and loyalty. In the travel market, we have hotels (Hilton), car rental (Avis) and airlines (Jet Blue). Rental housing is one of the largest personal expenditures that its customers make each and every month, yet there isn't a single, well-known consumer brand I can think of (on earth) in the multifamily sector.

These insights led to the creation of the UNCLE brand. I like to describe UNCLE as a hotel chain for living. It has a challenger brand mentality.

It's the Virgin (vs. BA) or the Harley Davidson (vs. everyone on the road). The

mission is to be problem:solution oriented. We try and think of a problem renters have with the experience and then conjure up solutions to address them.

We offer promises around flexibility, repairs and service which are rare (to say the least) in the marketplace. I don't think any of our ideas are rocket science. We certainly haven't invented the iPhone of renting, but we take the view that lots of little things, done right, add up to big things over time. Obsession with all aspects our properties are critical elements of long-term success: design (by the same people who curate Soho House), amenity spaces for wellness and WFH, but mostly importantly good old fashioned customer service (reading our Trust Pilot reviews is my greatest pain, but mostly pleasure).

Our strategy at UNCLE help to address one specific dimension of housing needs. Because our "neighbourhoods" are 100% rental, we build more at a time and create greater supply than traditional 'for sale' developers are able to deliver. Our customers tend to be professionals who are still developing in their careers and although we do have residents of all ages and we have some wonderful families too (there are no restrictions of any kind at UNCLE), most of our clientele tend to be 25-40 and single, sharing or couples.

Clearly the housing agenda needs to stretch much wider than this and it's my contention that there has been very little, if any, true innovation to solve housing crises here in the UK or indeed in other major cities around the globe (New York, Hong Kong, Paris, Toronto), beyond what I consider to be financial engineering such as help-to-buy loans or temporary stamp duty subsidies.

If we're going to take housing seriously, we need to tear up the old rule book, put partisan politics to one side, define what 'good' (but not perfect) looks like and try some new ideas and maybe dust off a few old ones too.

I think the time has come for a new, non-partisan non-for-profit which is exclusively focused on generating bold ideas to solve these problems (without bankrupting the existing mortgage and home equity market at the same time). Think IDEO for housing solutions.

New project launching soon. Let me know if you want to get involved! Watch this space.

Innovation: solving our biggest issues in real estate

Nine years ago when I was approached by a head hunter to leave my mainstream, commercial property investment role and move into the residential space, some questioned my sanity! However, I was convinced by the Residential Capital Markets team at Savills that residential really was going to be the next big thing in institutional investment. Many would say the rest is history.

More recently I have moved over to Savills IM to put what I have been advising on into practice. I think that now, more than ever, it is such an exciting time to be involved in the “Living” sectors. The housing shortage, both in the UK and Europe is well known. How investors choose to participate to help reduce this while also achieving their required returns is not always the most straightforward path. However, I strongly believe that private sector involvement in the provision of homes can do so much social good. In my new role, I am looking at many different parts of the Living sectors across Europe. However I am convinced that one of the largest areas to grow assets under management while delivering our investors their ESG goals is to invest in affordable housing. My colleague, Andrew Allen, has provided a more analytical approach to why this is the case.

We live in extraordinary times; the spectacular rise of innovation through technology enables the real estate industry to consider the prospect of a very different future, albeit one where the basic function of real estate is, in most ways, likely to remain much the same.

The concept of real estate offering shelter, safety, a place to live and work isn’t likely to change but these functions will be augmented and challenged by the innovations we now adopt.

It is easy to get drawn into the tantalizing prospect of innovation meaning concepts that are technology enabled. The increased focus on PropTech is wholly appropriate for our industry, and which start-up doesn’t fancy the prospect of being the next Unicorn? But is this really the whole story, are we being drawn away from innovation of a more traditional form?

If we started with a blank sheet of paper, what is needed, what challenges are the largest the real estate industry needs to solve?

In writing this article, I have stepped back to reflect on what the real estate industry perhaps needs most?

If we adopt a customer or community centric approach, my inner Bezos perhaps coming through, we might not start with a specific technology finding something to solve, rather we might think of what needs the most assistance of our open thinking and ability to innovate.

Over many years of thinking around this subject I conclude that, beyond ESG, the biggest real estate issue is the provision of affordable housing. The provision of appropriate affordable housing should in all likelihood provide genuine impact too – is it too simple to blend what is so badly needed for our communities with the stated objectives of institutional investors?

I have been privileged to work in very large global real estate teams. This has given me the opportunity to see issues on a global basis, see the issues within local communities, connect with policy makers and, of course, investors. **I cannot think of one major market where the provision of affordable housing is wholly adequate - the scale of the issue is immense.** I will admit that some markets have very well developed concepts, but please bear with my simplification.



Andrew Allen
Head of Product Strategy and
Development
Savills Investment Management



Foreword by Eleanor McMillan
Investment Director – Residential
Savills Investment Management

It strikes me that our industry can innovate here, can take responsibility and recognize it has a fundamental role in helping residents, policy makers and ultimately capital sources create a win-win-win situation. But this requires significant innovation in the way that the public and private sectors work in harmony. There are several reasons to suggest this might be possible, starting quite simply because the issue is becoming so big.

There are many surveys and papers written around the UK and global housing issues. I focus my thoughts on the UK, but we could easily consider most other developed countries in parallel.

A paper by Heriot-Watt University (May 2019) explains the scale of the UK issue. We summarise that, the shortfall of overall housing, of affordable housing and the limited scale of new development are extremely substantial. Heriot-Watt suggest that around 100,000 affordable units per annum are needed over a 15 year period. If each unit were to cost say £150,000, that would equate to a capital bill of c. £15bn per annum; these numbers get very large very quickly.

To be fair, we should recognize that the UK delivered near 1% addition to the housing stock in 2019 / 2020. But this was the highest level for over 30 years and shortfalls persist. We are simply not catching up with many years of under provision. Our population still grows, our housing stock ages and affordability is increasingly under pressure for buyers and renters alike.

Adding to the complexity of solving the affordable housing problem is a greater focus on safety and ESG standards of existing affordable housing. The impact is immense and will increasingly detract from capital needed to supply new and satisfactory housing. For example, in the UK we have been guided that the repair and improvement bill of the existing social housing stock (cladding and ESG matters) could reach c. £100bn. By comparison, the MHCLG (Ministry of Housing) suggest that around £12bn of capital will be provided for affordable housing over 5 years (from 2020) to create c. 180,000 homes. Whilst private capital creates affordable housing too, one can see that the repair bill dwarfs the capital available to build new houses.

Additional public and private capital needs to be found, but can we match the needs of community and public policy with those of the private sector? We strongly suggest that they can and indeed must.

Ultimately we believe that the needs of residents, policy makers and the majority of investors can be harmonised. But this takes innovation and a change in approach, a disruption to deep-seated prejudices. We must find solutions where the public and private sectors can ultimately work together with trust. We set out a couple of initial innovations:

- 1. Strategic housing policy needs to have greater stability** over time and a longer strategic vision; and frankly if interest rates can be set independently of political intervention then why not housing? Variation in regulation is as appealing to investors as variable contract law. Stability is an imperative!
- 2. Rent regulation or control does not necessarily have to be feared** by private capital. The prejudice is blunt and often incorrect. If policy is fair and stable then why should private capital fear it? After all, liability matching fund investors typically secure long dated income streams and readily embrace long dated income investments in other public real assets (infrastructure etc). The existing risk, of course, is that policy is unstable, that change is unpredictable. This is what investors really fear, not a stable policy that they can price with confidence.
- 3. Housing Associations and Local Authorities could run a model of being operators** rather than owner operators. Do they really need to own affordable housing? Why use the balance sheet that way? A better approach we believe would include for HA's and LA's to have a long term operational contract over affordable housing, ensuring the needs of tenants served alongside efficient management of the housing for the landlords.

We have many more thoughts around the implementation of such ideas. But ultimately we see it that investors desire long and stable income streams and this can be matched with the needs of our communities through the provision of long-term affordable housing which meets the needs of tenants. With a huge surge in stated intentions towards impact investing, and with such a huge community issue prevalent, surely now is the time for this innovation.

Why innovation is necessary but not sufficient for sustainable residential investment



Anna Clare Harper
CEO, SPI Capital

UK residential property is uniquely stable, profitable and diverse in its ownership, age and quality. This diversity, unlike the positive ‘Diversity and Inclusion’ definition of the term, is a problem that is holding back sustainability. It’s a problem that innovation can help solve. However, innovation is ‘necessary but not sufficient’, and more action is needed.

Diverse ownership because property is attractive, simple and accessible

Residential property attracts interest from all walks of life because of its historic and forecast stability, profitability and relative accessibility. Mortgage finance is cheap and easy to obtain, and housing is relatively simple. We all have some experience, so it’s easy to ‘get it’. This view is encouraged by the media, from popular television shows and regular articles in major news publications. As a result, individuals from all walks of life feel they can and should invest in property, and culturally, we still see property ownership as both a signifier and determinant of success.

The result is highly fragmented, diverse ownership. Firstly, there’s homeowners - the bulk of the market - and 63% of households owned their own homes in 2016-2018.¹ Then there’s investors. 94% of property investors were individuals in 2018. Most residential investors have four or fewer properties: 93% in 2016, though this percentage has fallen since.² More recently, institutional investors have entered the market, notably through Build to Rent, though all built stock and pipeline is still <3% of the market. The large number of private owners makes sense, because 90%+ of housing stock by volume is made of smaller opportunities worth <£5m, which are inefficient for larger institutions to acquire or create.

Fragmented ownership and old housing stock make it difficult to embrace sustainability

Much of the UK’s existing housing is diverse, and aging. In 2015, 76% of our housing had been built before building regulations required insulation.³ The cost of ‘retrofitting’ older, less environmentally friendly properties is high.

The diverse nature of ownership, age, quality and variation of housing stock make it very difficult to embrace sustainable investing. By contrast, commercial property investors have greater resourcing, and more immediate commercial pressure to innovate. These factors help to explain why the sector is beginning to lag behind in its approach to sustainability.

How innovation can help improve environmental performance through marginal improvements

Innovation can help improve environmental performance incrementally, through:

- Improving environmental (and social) outcomes directly, for example through smart building technologies
- Using innovation to improve performance - making things quicker, cheaper or better. This might be about reducing running costs, so that property owners can deliver more for less time and money, and have the budget and bandwidth available to spend on making other ESG improvements whilst still living within their means or their budget
- More accurately measuring performance - which is one of the major hurdles in pursuit of a sustainable property market since ‘you can’t manage what you don’t measure’. Innovative approaches to cost effective measurement can be used to guide better decisions, in particular around when it makes sense to divest, or knock down and start again.

Specific innovations that add value in these ways include:

- Using drones to assess the need for repairs to save money
- Using Internet of Things (IoT) innovations that connect multiple devices, systems and/or buildings to improve efficiency and sustainability - for example digitising buildings so that they are ‘smart’, and using softwares to map out buildings, capture data and reduce energy usage through automatically controlling heating, ventilation, air conditioning, lighting, security and other systems, for example Metrikus
- Incorporating healthy living innovations for example air quality sensors from AirRated
- Using innovative ‘contech’ - the slightly dodgy-sounding name for construction technology including Modern Methods of Construction - from offsite manufacturing and onsite alternatives to traditional house building such as innovative techniques for laying concrete blockwork onsite to speed things up, limit on-site disruption and pollution
- Using connection platforms which link up buyers and sellers, owners and tenants, or construction parties and maintenance so that they can communicate, collaborate and share information more quickly and easily - for example OpenRent or Arthur

However, innovation is not enough.

¹ EPL

² English Private Landlord Survey

³ https://www.designingbuildings.co.uk/wiki/The_Housing_Stock_of_The_United_Kingdom



What else is needed: government action, collaboration, research and education

The most effective way to solve the problems we have will be through further government action. More is required, and anticipated, from more stringent minimum standards to grants and subsidies.

In particular, there comes a point in the life cycle of residential properties where it makes more sense to knock down and start again. This is dependent not just on innovation, but on government action and getting people from all walks of life to buy into the need for change.

As a result, we need a collaborative approach, research and development, and mass education. My own attempt to contribute to the last of these began last year, with a TedX talk on sustainable property investing and a book on how the market has changed, and what private investors can do about it. These two things, and the work I do with private investors in the Private Rental Sector, highlighted a gap in the market for a clear guide to how sustainable residential property investing might work, which I'm currently working on. As I wrote, I realised the magnitude of the task - far greater than what one amateur writer can tackle alone!

As hard as it is, I believe that at the intersection of profits and positive impacts lies great rewards, and that the best forms of investing are those which generate a profit, keep risks to a

minimum, and have positive impacts on society, in line with the UN Sustainable Development Goals.

It won't be easy, but I believe there is an incredible opportunity right now, to transition to a more sustainable residential sector, and for other early movers - whether private individuals or corporates - to join.

Anna is a property investor, strategist, podcast host and author of Amazon Best Seller, Strategic Property Investing. She is currently working on her second book, Sustainable Residential Investing.

She Co-Founded SPI Capital, a real estate consultancy with a social conscience that provides strategic support to investors who want to make the most of the opportunities in the current market financially, whilst delivering social value.

Anna was named in Management Today's '35 Women Under 35' and Bisnow's 'Women Leading Real Estate'.

She previously developed the strategy and built the seed portfolio for a HNWI-backed fund targeting a £100m+ housing portfolio, worked on £2bn+ transactions as a Strategist at Deloitte and studied real estate at Cambridge.

Anna is a TedX speaker, hosts a leading property podcast and is regularly featured in leading publications including the Financial Times, BBC and Forbes.

The unfamiliar recession



Robin Butler
Co-founder of Urban&Civic Plc

Two recessions in a little over a decade should have been calamitous for the house building industry. The reality has been rather different. The current pandemic fuelled 'downturn' has really turned economic logic on its head. Survival during the GFC necessitated major (publicly quoted) businesses having to dramatically reduce gearing by raising fresh equity and reorganising the approach to delivery so that most 'direct labour' was dispensed with and replaced by internal management of external sub-contractors. Somewhere along the way many management teams were granted high bar recovery targets which were deemed beyond reach. The tabloid reporting of the bonuses paid bears witness to the rapid recovery that the industry witnessed.

At the start of 2020, when news reporting focused on the impact of Brexit and not health matters, there were some mumblings about 'an early end of cycle feel' but industry observers were too concerned that house prices were still growing, construction cost inflation flat and house building margins being maintained at historically high levels. Large builders were reporting sales rates of around 0.7 per week which reflected a positive but not stellar market. The newly recapitalised larger builders were feeling suitably robust with their cash piles, low gearing and reduced overheads. SME builders favoured less well during the previous downturn with no access to readily available cheap capital through the public markets and expensive alternative sources only prolonging a broken model which saw many disappear entirely or end up in the hands of lenders and then Private Equity houses looking to build a critical mass. The SMEs that survived have been faced by an ever widening gap in delivery costs between them and the highly efficient larger competitors fuelled with an improved delivery model.



Cala Homes at Wintringham.

An ariel of Houlton Rugby.



The first lockdown in March caused understandable panic within the industry with construction ceasing and sales offices shutting. In our role as master developers we were rapidly able to resume the delivery of civil works where workers are largely inside vehicles or naturally socially distanced. On sites where major earth movements had been slowed by the previous winter rains old programme targets were re-established. Civil contractors were more than prepared to put extra labour and machinery into contracts to avoid idle fixed costs. Meanwhile the construction of houses, having almost entirely stopped, restarted during May but with all the stuttering of an old diesel generator on a cold morning. The social distancing of the trades in confined spaces together with the enforcement of one way movement through a house was bad enough but the continuing closure of the building suppliers pushed many trades into the 'it's all too hard category' and they simply voted with their feet by staying home.

A bizarre set of dynamics began to emerge. The supply of houses was being constrained and by mid summer viewing appointments were either virtual or secured only by prior appointment. With most office based staff now working from their kitchen table or the spare bedroom and the kids turning the limited outdoor space into a playground, the clamour for more space from the entire family became ever louder. The natural outcome was that 'semi-urban' locations with longer commutes but lower values began to become highly prized. The trade of a 900 sq ft London Zone 2 two bedroom flat for a three bedroom 1,200 sq ft house with a garden (and change) with the only downside being an extra 30 minute commute once or twice a week seemed a fair one to many. With impaired supply chains and continuing restrictions builders simply couldn't go fast enough. Some major builders had to tell their marketing departments to slow down the pace of sales to

allow the delivery to pick up. The SDLT contribution from the HM Treasury added fuel to a highly combustible market but the fire was going to rage in any event.

The key metrics for the house building industry 18 months after the first lockdown make compelling reading. House prices have peaked at around 15% annual growth and much stronger in these highly prized commutable 'semi-urban' locations'. The rates of sale on some sites have passed two per week with averages overall in the stronger areas edging up perhaps to close to one. There are perhaps signs that this has peaked and growth is slowing. Construction cost inflation for houses has been difficult to manage with acute shortages of imported materials. This will settle down as more factories reopen and more HGV drivers get back behind the wheel again. However prices will rebase at a level materially above last year. This will disproportionately hit the SME builders again. Meanwhile civil construction costs seem to be under less pressure. House builder margins are finally beginning to feel the strain with a strongly competitive land market meaning that successful bidders are having to shave their Gross Margins by 2-3%.

What does the next year hold for the industry. With markets hyper-sensitive to external pressures, perhaps it is increasingly difficult to speculate. This is what I see, all things being equal. Probably a slight softening of demand in 'semi-rural' areas and an inevitable rebalancing in the recently shunned urban locations. A natural slowing of house price growth but a continuing rise in construction inflation will squeeze margins as the land market remains highly competitive. It is perhaps construction costs which are the most troublesome aspect. It may be that new modern methods of construction hold the key to affordable delivery and increasing SME competition in the market. A compelling topic for another day.



It's Phase 3 for Me and a Conversation with a Barbarian



Phil Clark

Chair and Non-Executive Director
www.bpclarkconsulting.com

After 37 years in the real estate industry, earlier this year I took the decision to transition to a world of non-executive activity, or as I call it, Phase 3 (Education and an Exec career being the preceding phases). Ian Marcus and Werner Baumker have asked me to talk about the industry opportunities and challenges I'm engaging with Boards and the wider industry on, and about the formation of The Real Assets Academy in particular.

The Real Assets Academy

School students whose mind is curious about pretty much anything will more naturally gravitate toward work-based training, Further or Higher Education. For many though, the route to a career is not always obvious and often feels inaccessible.

The Real Assets Academy is being set up to connect our industry to the 2000 most underserved UK state schools and specifically highlight career opportunities in the real estate and assets industry to students through schools. The message is simple – there is a role for pretty much everyone in our industry no matter what your aptitude, background or interest is.

The first task is to highlight that the industry exists and we're doing this through two activities – we have invited companies to commit to becoming a member at a nominal cost and ask them to be willing to provide a small amount of time to explain to students what they do and how they entered the industry. This will provide some contacts between schools and our industry where often then don't exist and mentoring for students who develop an interest in our industry.



Secondly, we are inviting students to enter an essay competition with the winners having their essays published.

It seems to have struck a chord - in the space of 6 months, 49 well known real estate companies have signed up to become members. We go live in September. More details on are the Real Assets Academy website if you're interested to know more or get involved – don't hesitate to contact me directly if you do (phil.clark@pclarkconsulting.com).

Phase 3?

In my opinion, I think we are living in probably the most exciting time ever for the real estate industry. The opportunities include rapid growth in life science companies, major investment into proptech, emerging green energy investment strategies, repurposing urban centres, meeting the demand for residential rented property.

But it is also one of profound change and it's hard for businesses to know which way to pivot with so many challenges ahead. Achieving carbon net zero, future proofing real estate from climate change, measuring and proving positive social impact, understanding the life cycle impact of real estate on emissions, and forecasting what investment demand looks like in the medium term to avoid assets being stranded.

In my experience, including hours of analysis and debate at the Bank of England and within the major industry bodies, understanding two points is critical for Boards to set a strategy and navigate their way through them and this is my starting point for conversations with Boards / industry bodies.

No 1 – understand the 10% rule

In each economic downturn of the 1990's and The Great Recession... and as well articulated in JK Galbraith's book on The Great Depression, the human response to major market risk is often relative to today's pricing and always conservative. 'The market is a bit frothy, but any slowdown will probably only reduce prices / values 10% or so...'. The reality is usually more like 25% to 50%! I don't think we're facing a major economic downturn, but we are facing some substantial challenges that create both risks and opportunities.

No 2 – a challenge can only be overcome if it is acknowledged

My own view is that transitioning the real estate industry to a carbon reduced economy will be much more profound than many anticipate. In 2000 when announcing The Igloo Regeneration Fund, I felt elated at the United Nations describing it as the world's first sustainable property investment fund. I asked an investment partner of ours whether they had a sustainability policy - the entire room literally burst out laughing. I don't know of any company that doesn't have a sustainability policy now.

How far should a business embed sustainability into their business strategy. My advice is to fully embed it in the business plan and expect regulatory and societal demand for change to accelerate from here.

The conversation with the Barbarian?

The Barbarian I refer to arose in my LinkedIn article titled: 'Spare A Thought for The Barbarian'. In summary, we humans often don't react until a crisis is present... or as the adage says, no-one reacts until the Barbarian is actually knocking at your door even though you heard it coming when it was a long way off and you knew it's intent was to attack you. My aim is to engage with the proverbial Barbarian before it gets to my door! Or to put it in a real estate context, to transition company investment and business strategies without destroying the business and still delivering attractive returns.



Real Estate in a post Covid19 World

— From a **building block** to a **block** on the economy



Graham Chase
Professor Graham F. Chase
Chase and Partners LLP
FRICS FCI Arb C. Arb FRSA FInstCPD

In last year's publication I considered the potential impact of the Covid Pandemic and the resilience of the commercial property market during such an apocalyptic time and how the future may have to be reimagined. Much water has flowed under the bridge since then but in a strange way as for any water course the general flow of markets does not alter unless there is a dramatic change in the source that gives it life.

This leads nicely into this year's article where I am going to look at what commercial real estate means to the UK economy and how government interference and resulting policies will impact on this critical sector of the UK economy.

Given the likely audience I will nervously remind myself of where commercial real estate sits in the scheme of things and foremost, in my opinion, is as a factor of production. Wrong, I hear some observers mutter as traditionally the only 3 factors are land, labour, and capital. However, that is akin to relying on the seven wonders of the ancient world with only the Pyramids still around to tell the tale. Even the most diehard traditional economist recognises that Enterprise is a fourth factor and more enlightened economists recognise that there are probably 7 factors by adding buildings, raw materials, and machinery/tools. Whatever way you cut it "Land Property and Construction" are true factors of production fitting the definition as a *"resource needed for the creation of goods and services to make an economic profit"*.

The second quality of land, property and construction is its contribution to the UK economy. Ignoring agricultural and amenity land and the residential sector construction contributes £90 billion a year to the UK economy which is 6.7% of GDP and commercial property £100 billion and 7.0% of GDP, which combined is 13.7% of UK GDP. To put this into context manufacturing's share of UK GDP ranges from 11.3% to 13.6% and more recently has been at the lower end of that spectrum at a bout 11.6%. Commercial property and construction therefore contribute more to the UK economy than manufacturing and has consistently done so since the 1950's.

Property and construction employ well over 3 million workers whereas manufacturing employs just over 2 million. Now this is not about what is better, manufacturing or property and construction but it is important to understand where property and construction sits and its importance as an area of business for the UK in driving forward the economy at a time when there is a real danger that Government is overlooking these fundamental facts.

With a focus on commercial real estate, which has an estimated value of well over £1 trillion, Government made it clear that Landlords and tenants must work together to settle issues arising from the Covid19 pandemic and the ability of occupiers to pay the contracted rents in their leases. They introduced a moratorium on the ability of landlords to evict commercial tenants for breach of rent payment covenants (forfeiture) which initially was until 30th June 2021 but has now been extended until 25th March 2022, effectively a period of 2 years restricting the rights of landlords to use all the weapons in their armoury to enforce rental payments due under their leases.

The Government's first action was to introduce a Code of Practice for Commercial lease premises published on 19th June 2020 encouraging landlords and tenants to communicate with each other and negotiate on rental arrears and payments, the result of the pandemic and trading limitations, imposed by Government statutes and regulations, with the hardest hit being the leisure and entertainment sector. The Code has already been tested in the High Court where the weaknesses of the code were exposed because it is voluntary and does not change the underlying relationship through the lease between the landlord and tenant. This contrasts with the restrictions on forfeiture as set out in section 82 of the Coronavirus Act 2020 and which are not voluntary.

However, now on to stage 2 where the Government acknowledges the problem of rent arrears, amounting in the retail property sector alone to £2.9 billion by the June 14 day 2021, according to the BRC. The proposal is to introduce mandatory arbitration to find a "fair and reasonable" settlement to rent arrears. However, the introductory paper issued by the government gives no indication as to what constitutes "fair and reasonable" and spends several paragraphs describing the tenant as a business but not the landlord.

Given the importance of construction and property to the UK economy as described above any government action which fails to recognise this critical industry will have significant and adverse consequences, some foreseen and some unforeseen.

Many tenants are larger and better heeled than the landlords they pay rent to, have benefitted from a 100% rates holiday during the pandemic and with the introduction of the furlough system have had their employee costs covered. Landlords have had to continue trading during the pandemic with limited

abilities to furlough staff, increasing burdens of management with closures, enhanced security measures, failed rental payments and breaching banking and loan covenants. In addition, and at a stroke, the Government have sought to undermine the fundamentals of contract privity, security of income and property and construction as a business activity at a time when capital values have fallen and occupational demand has in some areas fallen, particularly retail, for reasons other than the pandemic.

It is therefore worth remembering that between 20% & 30% of pensioners assets are invested in commercial real estate and that pension fund property assets have an estimated value of just shy of £1 trillion. Most pensioners do not have a clue that the comfort of their

retirement owes so much to rent from property with the majority probably still harbouring the Dickensian stereotype of the uncaring, greedy landlord. If only they knew the truth. Government is happy for this picture to remain as there are no votes in commercial property which is seen as remote from the individual, yet nothing could be further from the truth.

As demonstrated above the UK economy is dependent on the performance of the commercial property market as an integral and significant part of GDP. If Government acts which discourages investment into commercial real estate, construction will in turn be damaged by the stifling of capital (a factor of production) into this critical part of the UK economy.

But even if none of these issues bother government because they do not directly affect individuals as voters then perhaps further thought should be given to the damage to pensions as a medium of investment which does affect the voter directly. However, in my opinion the greater threat is the lack of investment in new property as a factor of production which ensures the wider economy operates effectively and profitably. The lack of the right property in the right location at the right time will turn round to bite the UK economy and the voter hard and all because Government thinks there are no votes in commercial property and that landlords do not matter as a business.





CitiPark



Ben Ziff
Managing Director - Parking, Energy
& Technology
Town Centre Securities PLC &
CitiPark PLC

CitiPark is one of the leading parking operators in the UK, owned by property investment and development REIT Town Centre Securities PLC (TCS).

Operating 19 car parks across the UK, the business is committed to providing quality services, using the latest technologies including ANPR, CitiCharge EV charging and contactless payments to make customers experience as quick and hassle-free as possible.

At the start of the COVID-19 pandemic, the UK Chancellor announced that he was “determined to do whatever it takes to support businesses during Covid-19” as he extended business rates relief for the high street. Unfortunately for CitiPark, whilst support was extended to retail, leisure and hospitality premises, many Multi-Storey Car Park Operators [MSCP’s], who rely on the custom of those benefiting from the exemptions, the support was not far reaching enough.

Initially, CitiPark reacted to the pandemic by proudly launching a series of initiatives to support the NHS during the Coronavirus pandemic. This included free car parking at selected car parks across the UK, concessionary hotel accommodation and lighting up a branch in Leeds blue to mark the heroic work of NHS staff.

Whilst restrictions were slowly lifted, the ‘return to the office’ (and subsequent requirements for parking) was not as immediate as expected in more regional cities, whilst we saw stronger demand inside the M25. With this in mind, CitiPark reacted quickly in working collaboratively to adapt vacant space to create a compliant, safe place for people to socialise.

Following a challenging year, summer pop-up concept, ‘Multistories’ repurposed level 8 of the flagship CitiPark Merrion Centre & first direct arena branch in Leeds into a cutting-edge venue with music, food and drink in a unique, socially distanced setting for up to 350 guests.

With the addition of a big screen specifically for the Euro’s 2020, the venue was highlighted as one of the places in the UK to watch the games, with sessions selling out and attracting a new audience to the city’s Arena Quarter district.

As office staff, students and those looking to meet with friends headed outside, the new open space proved a hit with those looking for a very different venue for socialising.

With table service, a fully licensed bar and several more food vendors and music acts, the concept welcomed thousands of visitors over the summer.

In regard to the longer-term strategy, there are a plethora of opportunities the company are taking forward to ensure CitiPark remain one of the leading car park operators and evolve in line with post pandemic audience expectations.

Until the end of February 2020, CitiPark enjoyed a strong year and saw significant year on year improvement in both revenue and profitability. A number of new initiatives were launched during this period, including launching a bespoke, easy to use parking app and offering instantly available season tickets to car park users.

As the business has seen a 94% increase in customers prebooking parking since pre-pandemic times (October 2019 versus October 2021), further considerable investment in its digital platforms is now underway to ensure the customer journey is smooth and contactless from booking to exiting the car park.



Significant steps to expand the CitiPark car park management services platform has been successful, with additional locations announced in the past eighteen months. This number is expected to grow as third party car park operators look for an experienced business partner to manage and maximise revenue for their car parks as high street retail and office services continue to welcome ever increasing visitor numbers.

CitiCharge, the subscription-free electric vehicle charging network, owned and managed by CitiPark, continues to invest in accessible electric vehicle chargers to improve the UK's charging infrastructure and eradicate the obstacles to EV charging. This, along with further development of our partnership with Tesla to rollout their Supercharging network and an integrated emissions-based tariffs, continue to demonstrate CitiPark's commitment to going green and investing in sustainable technologies which conserve energy and lower pollution.



He said, “F**k business”, but did he mean “F**k landlords”?



Chris Bartram
Tramco Cambridge Limited

Last year I wrote about the attractions of the commercial property sector in the context of very low interest rates, and the absence of any other relatively large, and higher yielding, sector with similar bond like characteristics.

Since that time a variety of foreign investors have been active in UK, in part citing higher yields than other ‘safe’ markets, and the UK legal system as crucial stable support for investment.

The UK market has been largely unaffected by major legal change (apart from SDLT hikes) for some years, and when I wrote, no one expected the proposal for a new arbitration process for rent payment liability? How will it work? Can tenants appeal against past settlements made voluntarily with their landlords? What can landlords tell their lenders about what rent (and when) will be collected?

I recently attended a webinar hosted by the BPF with Treasury officials for them to explain the arbitration proposals, and take questions. It was clear that drafting has a long way to go, and the target is to have the law in place by the time that the restrictions on landlord powers ends in March 2022. But what happens if these events do not coincide?

It is equally unclear what specifically will be needed in the commercial property sector to adapt older buildings, or build new, to meet Net Zero 2030 targets. However it is clear that costs of construction will be affected.

As I write, in Scotland, a new Minister has been appointed with part of the role being to devise proposals for rent control. I can remember the 1970’s market when rent control came into law, and the distortions and confusion caused by it. Are we about to revisit all that?

Retail values have been shaken, and Covid has made it worse. Office values, for the best stock, seem much more resilient, but I wonder if this relative confidence is misplaced until a norm for hybrid working has been established and rent levels adjusted accordingly. Only Beds, Meds, and Sheds stand proud in valuation terms, but they cannot absorb all the capital that is invested in the sector.

Confidence is being shaken on various fronts. By market evolution in retail and office. By Government proposing to bring new arbitration law, and by legal restrictions on landlord’s lawful actions, without regard to the owner’s own obligations.

I thought that the industry had won the argument that commercial real estate is an essential factor of production, and as much as the population needs good housing, it also needs modern, fit for purpose workplaces. This seems disconnected from government thinking as their new proposals make the business of providing good commercial space harder to achieve, and the risks of getting an attractive return from doing so, are increasing.

There seems to be a Government blind spot in relation to commercial property, and it may cost us all a lot.

RENTS TOO HIGH



Buried Treasure at Jesus



Rod McAllister
Girton 1981, APEC Forum

A miscalculation is forever fixed in stone - marking the location of a time capsule beneath Jesus College's First Court.

Due to an excess of relatively high living, for an architecture student, I found myself short of cash at the end of Lent Term, 1984. My previous holiday jobs had been mundane or remote from my subject area. I had worked in Harrods, packing chocolates during the day and turkeys by night. I had also hung exhibitions then invigilated them at Whitechapel Art Gallery. I decided that I now needed something local, challenging and outdoors. Inspired by the wealth of masonry surrounding me, I found Rattee & Kett Ltd, Cambridge's then pre-eminent stonemasons' yard based in Longstanton.

Founded in 1843, Rattee & Kett had completed projects at the Palace of Westminster, Ely Cathedral, Arundel Castle and the restoration of St James's Church Piccadilly after the Second World War. Their Cambridge work included the hall and library of Pembroke College, lecture rooms at Gonville & Caius, Our Lady and the English Martyrs Church and Walnut Court at Queens College.

The foreman at Rattee & Kett appeared to be intrigued by the student-on-a-bike applying for an apprenticeship but we both became convinced this would be right and proper for my education as an architect. I was hired and embarked on my journey into masonry in the footsteps of Michelangelo 490 years previously. After a week selecting and cutting recycled York stone paving slabs at the yard, I was posted to Jesus College, only 260 metres from my rooms in Portugal Street. I was to remove the old gravel path and create a layer of hardcore with drainage where required and set strong red brick edges into concrete. Laying the York stone slabs onto a bed of sand, levelling and tamping into place was the most satisfying part - much like a giant mosaic. The foreman visited daily to direct operations and provide quality control, that is, fault finding. My Director of Studies, a Fellow at Jesus, found me standing in a hole one day and asking 'what the Hell are you doing down there?'. I met him on a train decades later and he denied it, claiming that he would have approved.

Next began the gruelling task of setting thousands of pebbles into the borders. This was back-breaking, soul-destroying work. A dumper truck dropped a pile of pebbles at one corner of the court and I was told to wheelbarrow them to the far end and work backwards. I grew increasingly concerned that the pile wouldn't be sufficient

and was assured that firstly, the yard would have calculated the correct volume of pebbles required based on 141 years of experience, and secondly, that any extra would come from the same stock. I gave up trying to convince the foreman that he should arrange for more as soon as possible and so carried on as directed. Sure enough, the pile was almost depleted as the half-way line approached.

I waited a day or more for resupply and used the time to tidy up the site and entertain friends with dumper truck rides around the college grounds. I also filled a small metal box with coins, photos and the front pages of the Times and Stop Press. I buried it under the new path for posterity.

When they arrived, I was horrified to see that the new pebbles were smaller, more rounded and yellower than the originals. I was told to carry on as 'no one will ever notice'. I completed the path and am extremely proud of it and the fact that it should remain there for hundreds of years. However, I occasionally wake up screaming as I imagine countless generations of dons sighing with disappointment. Nevertheless, I've begun to come to terms with the fault line that spans part of First Court as a tiny morsel of history on display in the college fabric.

Rattee & Kett went into administration in 2011 and was bought by Stonewest Ltd. Brown & Ralph Building Restoration inherited Rattee & Kett's premises in Longstanton.



The Department of Land Economy



Professor David Howarth
Head of the Department of Land Economy

The Department of Land Economy operated virtually and remotely for the whole of the last academic year, including holding online exams for a second time in 2021. As the new term starts we have been able to reopen part of the Silver Street premises for those who prefer to work in an office, but large lectures remain online for the time being. It's going to be a gradual return, and, I suspect, as in most organisations, things are never going to be fully the way they were before. The Department won another Platinum Award from the Cambridge Green Challenge this year, which was largely in recognition of the way we adapted to the pandemic, and I can envisage that many of the new ways of working, many of which are much greener than the old ways, will stick.

I can report two important changes in the Department's academic staff. We welcome Dr Emily Webster, who starts this term as our new lecturer in Environmental Law. Emily is taking over for five years from Emma Lees, who has a professorship for that period at the European University Institute in Fiesole. Emily comes to us from Hughes Hall where she has been a Research Associate in Climate Law and Governance at the Hughes Hall Centre for Climate Engagement. Her work concentrates on the interaction between environmental law and policy, especially about climate change, and company law. With growing interest in the policy and commercial worlds about ESG (especially 'E') this is a field in which the Department is eager to expand. But we also say goodbye to Kanak Patel, who has retired after many years of service to the department. We wish her every good wish for the future!

Our research continues to go from strength to strength. Important work is appearing in the academic journals and in books on topics as diverse as pricing climate risk in residential property, the emergence of walled communities in Ghana, blockchain contracts as governance tools, preventing homelessness in the UK, the geography of populist discontent and the constitutional implications of the Brexit debates in 2017-19.

And previous work continues to have impact on the real world. We were especially struck by the influence of our Centre for Environment, Energy and Natural Resource Governance's work on the arguments that led to a stunning defeat in the Dutch courts for Shell on its climate change impact.

Members of the Department also continued to be appointed to important editorial boards and professional academic associations, not only in the UK but around the world. And we regularly appear before parliamentary committees and write or are written about in the media – from the FT (especially our Centre for Housing and Planning Research) to the Daily Mail (myself, I have to confess).

The Department has proved itself to be extraordinarily resilient and productive in the past eighteen months. Let us all hope that we can keep that going in the coming 'period of adjustment'.



Virtual and in-person hearings beyond COVID-19



Mohamad El Daouk
Land Economy PhD Student
Queens' College 2020

In late 2020, the International Arbitration Centre unveiled its 'Covid-compliant super suite' hearing venue. Based in London, this venue was aimed towards accommodating the rise in dispute resolution proceedings that were being held both virtually and semi-virtually. Some have viewed this as the inauguration of 'online dispute resolution' even though this dispute resolution method has existed, in different settings and forms, long before the outbreak of the global pandemic. Everyone

knows that COVID-19 will eventually come to an end, but nobody really knows the fate of online dispute resolution at that stage. Will online dispute resolution revert to in-person hearings, or will it embark on towards the post-pandemic era? Here are the thoughts of a doctoral student that is a proponent of the notion that online dispute resolution is here to stay beyond COVID-19.

In the 2000s, online dispute resolution was trending, but never really took off as a full-fledged alternative form of dispute resolution. The lack of advanced technology, fast internet, and the cost to bring about the aforementioned—whilst considering its low chances of success—diminished the allure of its exclusivity. But what does 'online dispute resolution' really mean? In its pre-pandemic context, online dispute resolution referred to the use of information technology in dispute resolution undertakings. It also meant the use of computerised systems to literally resolve a dispute that would have otherwise been normally resolved by a human intermediary. This 'legacy' form of online dispute resolution involved each of the disputing parties placing a settlement bid that would then be computed and split by a computer to declare a settlement.

In 2020, the two key factors that supported the re-emergence of online dispute resolution were: the forced halt of daily 'in-person' life by COVID-19; and the availability of technologically advanced means to accommodate dispute resolution proceedings in a virtual setting. Contemporary online dispute resolution incorporates the use of technology, innovation, and inclusive methodologies to resolve disputes. Most of the hearings during the outbreak of the pandemic were held virtually before the Business and Property Courts. In light of that, there has been a positive sentiment among those who had partook in virtual proceedings, whereby partakers have shown preference of having semi-virtual proceedings combining both in-person and online sittings.

Moving on beyond COVID-19, no one really knows for sure what the scene will be like for dispute resolution proceedings. What is more certain is the unlikelihood for dispute resolution proceedings to fully revert to taking place in person—or fully convert to taking place virtually. This implies that a dual form of hearings is mostly likely to be the steppingstone of dispute resolution beyond the pandemic. Thus, virtual hearings are here to stay by virtue of the convenience they can bring to parties that are unable to attend in person. But what about 'online dispute resolution' as an exclusive dispute resolution method? The pandemic has changed the connotations of an 'online' form of dispute resolution. In times past, it would have been safe to assume that the term implied a dispute resolution method that exclusively relied in full on an online and computerised system.

However, the contemporary reality shows otherwise. Online dispute resolution has gone from being an exclusively computerised dispute resolution method, to an inclusive method that enables virtually carrying out litigation, arbitration, and other forms of dispute resolution. Henceforth, our interpretation of an online means of resolving disputes can only be one of an inclusive and efficient nature that tailors the needs of the disputing parties on a case-by-case basis. For some people, there is a preference of holding a dispute's interim hearing online, and then holding the final hearing in person. For others, a wholly in-person or virtual process might be more suitable—for example, where one party is incapable of physically attending the venue due to a medical condition. From a third perspective the physical distance of the parties from the venue can also play a role in their choice of a virtual dispute resolution hearing. With that in mind, it will be very interesting to see how the contemporary understanding of online dispute resolution will develop and transform as the world advances beyond the global pandemic.



Views on the changing face of Real Estate: Innovation, technology, R&D, life sciences

Technological change has been a key driver of economic growth, where work happens and where people live for many centuries. It has been a key driver of demand. Over the past few years technology has led to a divergence in demand for different sectors as e-commerce has led to in-store retail sales growth slowing and retailer demand for physical space falling whilst it has fuelled the sharp growth in demand for logistics facilities and datacentres. Investor sentiment has reflected this shift in demand with yields moving out for retail and in for industrials. A consequence of these factors has been a dramatic shift in the relative value of sectors as retail values have fallen (in the UK by 30% between June 2018 and June 2021) whilst industrials have increased in value (by 24% over this three year period). For funds and property companies with debt, these value changes have been amplified and in the UK, we have seen the collapse of Intu, a massive fall in the market cap of Hammerson, and Segro rise to become more valuable than British Land and Land Securities combined.

There has been a major shift as the real estate industry which used to be dominated by offices and retail has shifted to a much broader mix of sectors which are either more resilient to the impact of technology (e.g. residential) and/or actively supporting this wave of innovation and technological change (e.g. logistics, datacentres, life science space). This shift is reflected in the composition of the list of the largest REITs globally. This used to be a mix of retail REITs, office REITs, diversified (mainly office and retail) REITs and a few others. Now the list has only one retail REIT (Simon) and two diversified REITs with the list containing six residential REITs, two logistics REITs, two self-storage REITs, two datacentre REITs, two healthcare REITs and a life sciences facilities REIT.

This is a challenging and exciting time for real estate investors as the uncertainty about which buildings and places will be attractive going forward has increased and with that the uncertainty of future income flows. It is also an exciting time for research and teaching given the emergence of these new sectors, new sources of data and a greater interdependence between users of space and investors in that space and more uncertainty which will hopefully encourage more interest in research.

Research

Our research includes looking at the drivers of risk and return for real estate assets and investment vehicles. It is not easy to differentiate the impact of technology from other factors but some of the research we have done has identified economies of scale in REITs (this includes the ability to spread the cost of investment into technology across more assets as well as using the benefits of scale and the associated data insights to improve operational efficiency). We have also undertaken research that has examined the benefits of specialisation – identifying that specialist funds do tend to out-perform generalists. It is not easy to identify the reasons underlying this but it may be that a superior understanding of how technology and other changes are affecting occupiers in their sector may be an important factor.

Uncertainty and how averse investors are to uncertainty is the focus of a current research property for EPRA. We expect to finish this report later this year.



Nick Mansley
Executive Director, Real Estate
Research Centre
Co-Course Director, Masters in
Real Estate

We are updating of the Size and Structure of the UK property market report for the IPF. This will look at how alternative sectors have grown in importance as part of the investment universe – reflecting the impact of technology on occupier and investor demand.

The specific requirements of life sciences companies including the benefits for young companies of both being near others and with access to shared facilities/networks on a research campus have been a feature of two research projects. Firstly, a project to understand the issues in the provision of lab space in general and wet lab space in particular in the Greater Cambridge area. Secondly, working with a major real estate investor to help identify sites suitable for the provision of life sciences orientated space.

Finally, as we revisit the work we did on sustainable long-term real estate values – the potential of innovation and technology to lead to structural changes/breaks is an issue we will be returning to in coming months.

Teaching

Covid forced us to use online teaching for lectures. What we have learned from this is that online delivery can be effective especially for particular tasks and topics – it enables students to go through concepts at their own pace and do online exercises to reinforce their learning and it improves accessibility, with recordings available. However, it struggles to achieve the breadth of conversations and enthusiasm that having people together in a classroom brings. In-person sessions and interaction amongst the cohort are crucial to get the most out of the course and the Cambridge experience. It has been great getting the 2020 MSt cohort together in Cambridge and meeting in-person the 2021 cohort of MPhil students!

The theme of technology and innovation has been a core theme of the MSt in Real Estate since the course first started five years ago and this get weaved into the curriculum and activities in a number of ways. We explicitly explore how it is affecting the industry, guest speakers give their insights on

how they are using new methods, data and new materials in their businesses and we have site visits to see technology and new methods in action and to explore the requirements of tech-orientated occupiers.

Personal

On a personal note, and nothing to do with real estate, I have finally succumbed to embracing technology to improve my cycling...and I am now a convert. Using a smart turbo trainer that can precisely measure your power, combined with an app like Rouvy that lets you cycle anywhere in the world (and race against time or others) I found hugely motivating through the winter/spring. I think it helped me train smarter and given it is quite time efficient it is also good for getting the balance right between work, sport, rest and play. I achieved my highest placing yet in international competition – 4th in the World Championships in Long Distance Duathlon – and I expect to build in some more technology into my training in the year ahead.



How personal are aesthetic preferences?

VERY!



Dr. Thies Lindenthal
Associate Professor of Real Estate Finance

‘You are a bit of a snob, aren’t you?’ my mother remarked matter-of-factly when I could not stop deriding the look of the home her neighbours had recently built. She is right, of course, the new house (Figure 1) just across the road is perfectly fine. It’s spacious, of solid quality and it meets the highest energy efficiency standards. But why does it have to look so bland?

The usual explanations that my architect friends give when discussing the lacklustre design of many new homes supplied by English home builders do not apply in this case. It is not the fault of a profit-maximising developer. The house has been designed and built according to the preferences of the owners. It is not a mass-produced cookie-cutter box but has been fully customised.

It’s not the planners’ fault either. Located in Northern Germany, the relevant building codes for this house were strict regarding size, built quality, and energy standards. However, they did not constrain the aesthetics much. Anything from a modernist bungalow to a traditional thatched cottage would have been possible.

Did the owners opt for this design to increase the market value of their house? I do not think so. In previous research, Erik B. Johnson (University of Alabama) and I found that buyers do not pay more for broad styles such as “Georgian”, “Victorian” or “Interwar” architecture, after taking into account the location and quality of the homes.¹ Playing it safe and picking a “standard style” does not pay off. To be clear, our study does not test whether excellent architecture is rewarded – we do not know how to measure beauty or originality – but the data show that the neighbours house will not be worth more just because it features a few historicising details.

Running out of other explanations, it might simply boil down to differences in taste: The neighbours must genuinely like this design. Or at least not hate it. Am I the snobby outlier, as my mother implied? How can we assess the perceived beauty, originality or charm of homes empirically? On the journey back to Cambridge, I started to work on an experiment that explores how diverse preferences for house aesthetics really are.

A few weeks later my co-authors Carolin Schmidt, Wayne Wan, and I launched a small app that lets participants like or dislike images on their mobile phones. All participants are shown the same stream of photos of homes from around the world. The participants can swipe an image to the right if they like it, or to the left if they dislike it. This simple ranking approach has been made famous by a dating platform but many other apps have copied it since. We love it for its efficiency. Ranking 2,000 photos takes about 30 minutes for most participants.

The first results are striking: We had expected to find a lot of consensus in the ratings. Instead, there was not a single photo in our sample that everybody liked. Some pictures are more popular than others of course (Figure 2 provides a few examples) but we fail to detect clusters of taste. One style does not fit all or at least pleases a clear majority.

Are tastes mostly random then? Of course not. Next, we estimate a set of Machine Learning (ML) models and try to see if we can predict responses by individual participants. These personalized prediction machines turn out to work well. In most cases, they can correctly tell whether somebody will find a house ugly or appealing. We end up with as many digital representations of preferences as we have participants (My mother is right, of course, my “digital twin for taste” is a bit of an outlier. However, it is not the most extreme snob in our sample!)

Our research has at least four real-world applications: First, the diversity in aesthetic preferences is probably larger than mass home builders believe. Using an array of personalized ML-enabled classifiers would allow them to properly test designs. Potentially, this could lead

Figure 1: The neighbours new house. Is this a missed opportunity, aesthetically?



¹ Lindenthal, T. and E. Johnson (2021). “Machine Learning, Architectural Styles and Property Values”. *Journal of Real Estate Finance and Economics*.

to fewer developers playing safe, building boring cookie-cutter homes just because they do not know whether a more original alternative will be appreciated. Ultimately, they could make better design decisions.

Second, relying on an empirical analysis of the exterior of buildings could make the planning process fairer and faster. Our ML models are not perfect but they are consistent in their judgment. To give an example: In March 2021, Cambridge City Council’s planning committee rejected a project that would have created modern living quarters for 113 students. During the consultation process, 307 objecting and 0 supporting comments had been filed, many of which offered outspoken feedback on the suggested design, including “quite possibly[...]the ugliest building in Cambridge”, “another hideous[...]structure”, “eyesore”, or “looking like a prison”. The building’s design was not the only reason why so many residents and planners objected, but aesthetic concerns offered one more opportunity to block the project. In situations like this, planning committees need to assess whether the design is indeed as outrageous as suggested by the comments. The perspective of having 113 students as neighbours could have darkened the view on the architectural merits. A “That’s ugly!” might simply mean “Not in my backyard!” In all fairness, our electronic focus group of ML models was not overly enthusiastic about the computer renderings as well. About a third liked it, which is more balanced than the 0:307 distribution of enraged neighbours.

Third, we show that human aesthetic ratings are often inconsistent and also evolve in time. From an ML-modelling perspective, surveyed ratings of building designs, for instance, should not be misunderstood as hard data. At best, ratings by humans are noisy proxies for a “ground truth” that eludes direct observation. Contrasting an imperfect yet time-consistent ML classifier with a more dynamic ‘human classifier’ provides insights into the black box of aesthetic judgments, or rather the ensemble of black boxes that jointly form an opinion each time we are looking at houses.

To emphasize the inconsistency of aesthetical evaluations, we collect ratings from a large number of participants in a way that makes consistency difficult for most people. We ask participants simply whether they like or dislike a sample of houses shown in photos. The simple question is not that easy since most participants cannot break the problem down into easy formulas. Many iterations make the task tedious and tiring influencing the mood of the classifier. Also, people learn throughout the data collection and constantly update their explicit and implicit criteria and benchmarks. Our findings are relevant for a growing body of behavioral and experimental housing research that uses images in combination with user-generated ratings on e.g. the perceived safeties of streets or the attractiveness of places. How big is the conceptual problem of potentially biased training data really?

Finally, an automated yet personal ML system could help potential buyers. It could filter listings based on ‘soft’ characteristics such as the exterior or interior design of homes. Have you ever tried to express what it really is that you like about a home? “Cozy” can mean something very different to you than to your estate agent. Swiping a few images left or right is easier and probably more helpful.

Figure 2: Participants’ tastes are more diverse than we expected.



More popular



Less popular



Mixed responses

Experimentation, Innovation and COVID-19



Shaun Larcom
Professor of Law, Economics
and Institutions

Together with Michele Acuto, Ferdinand Rauch and Tim Willems, we recently published an article in IEEE Spectrum on how the pandemic has forced us all to experiment. In this article we highlight that in addition to the largescale damage the pandemic has caused to human lives, it has also led to innovations, both at the individual and organisational level. We were invited to write this article following a study that examined the impact of a Tube strike in 2014. We found that approximately 5 percent of commuters who were forced to experiment during the strike continued to take a different route after the strike. We also found that in terms of travel time, the strike produced a net benefit, when comparing the one-off costs of the strike compared to the long-term benefits to those who found better ways to get to work. In the article, we note that such a phenomenon is not a one off case; for example, the eruption of a dormant volcano in Iceland, led to increases in education and income (83 percent in lifetime earnings) for young people who were forced to relocate. It seems that sometimes, adverse events can help us find better ways of doing things – in that they can prod us out of inefficient habits.

From reviewing the literature we find that there are at least four channels that can generate a net benefits from a disruption. To quote from the article, they are:

Habit disruption occurs when a shock forces agents to reconsider their behavior, so that at least some of them can discover better alternatives. London commuters found better routes, and Icelandic young people got more schooling and found better places to live.

Selection involves the destruction of weaker firms so that only the more productive ones survive. Resources then move from the weaker to stronger entities, and average productivity increases. For example, when China entered world markets as a major exporter of industrial products, production from less productive firms in Mexico was reduced or ceased altogether, thus diverting resources to more productive uses.

Weakening of inertia occurs when a shock frees a system from the grip of forces that have until now kept it in stasis. This model of a system that's stuck is sometimes called path dependence, as it involves a way of doing things that evolved along a particular path, under the influence of economic or technological factors.

The classic example of path dependence is the establishment of the conventional QWERTY keyboard standard on typewriters in the late 19th century and computers thereafter. All people learn how to type on existing keyboards, so even a superior keyboard design can never gain a foothold. Another example is cities that persist in their original sites even though the economic reasons for founding them there no longer apply. Many towns and cities founded in France during the Roman Empire remain right where the Romans left them, even though the Romans made little use of navigable rivers and the coastal trade north of the Mediterranean that became important in later centuries. These cities have been held in place by the man-made and social structures that grew up around them, such as aqueducts and dioceses. In Britain, however, the nearly complete collapse of urban life after the departure of the Roman legions allowed that country to build new cities in places better suited to medieval trade.

Coordination can play a role when a shock resets a playing field to such an extent that a system governed by opposing forces can settle at a new equilibrium point. Before the Great Boston Fire of 1872, the value of much real estate had been held down by the presence of crumbling buildings nearby. After the fire, many buildings were reconstructed simultaneously, encouraging investment on neighbouring lots. Some economists argue that the fire created more wealth than it destroyed.

However, we also note that that because we find better ways of doing things, it does not necessarily mean they will be adopted in the longer term. We can expect those who stand to lose to resist them. For instance, we can expect those who hold stranded (or devalued) assets argue for regulation stop change that would otherwise occur with people voting with their feet. To quote from the article:

One of the most famous examples of resistance to technological advancements is the Luddites, a group of skilled weavers and artisans in early 19th-century England who led a six-year rebellion smashing mechanized looms. They rightly feared a large drop in their wages and their own obsolescence. It took 12,000 troops to suppress the Luddites, but their example was followed by other “machine breaking” rebellions, riots, and strikes throughout much of England’s industrial revolution.

Resistance to change can also come from the highest levels. One explanation for the low levels of economic development in Russia and Austria-Hungary during the 19th century was the ruling class’s resistance to new technology and to institutional reform. It was not that the leaders weren’t aware of the economic benefits of such measures, but rather that they feared losing a grip on power and were content to retain a large share of a small pie.

We note that one way to increase the chances of welfare improving innovations being adopted is to commit to sharing the gains — so that those who would otherwise lose from an innovation — are compensated. That is, to turn a Potential Pareto Improvement into a Pareto Improvement.

Note: This article summarises and quotes, Acuto, Michele, Shaun Larcom, Ferdind Rauch, and Tim Willems. “What We Learned From the Pandemic: Most of all, it taught us how to adapt under pressure.” IEEE Spectrum 58, no. 8 (2021): 22-27. The article in full can be found at: <https://spectrum.ieee.org/covid-19-forced-us-all-to-experiment-what-have-we-learned>



Disruptive Technology:

Navigating its impact on real estate



Rohan Cardoza
Land Economy graduate student,
Selwyn (2021)

Technology is set to change the face of real estate- and the pandemic has, in many ways, acted as a catalyst for this change. In his latest book “Rethinking Real Estate: A Roadmap to Technology’s Impact on the World’s Largest Asset Class”, Dror Poleg documents the ways technology is changing how people use retail, office, residential, and industrial space. New customer behaviour has led to the emergence of new competitors such as Airbnb, WeWork, Common, Opendoor, and Invitation Homes. This new competitive landscape presents both risks and opportunities for landlords and real estate investors. Value is shifting away from the assets themselves towards those able to understand the specific needs of

end users. This underscores the importance of designing real estate with customer experience in mind. This means matching how people want to live, work, and play in the future with the actual design of spaces. Thus, those positioning themselves to take advantage of this change are poised to capture the bulk of future value creation.

Technology is reshuffling the value stack. It is making assets more dependent on their operators, challenging institutional investors’ assumptions about the asset class.

First, a building’s location will become insufficient to defend its value. ‘Forced experimentation’ with remote work, following the outbreak of COVID-19, has demonstrated that the physical presence of workers in centrally located offices, especially for individual work, is not strictly necessary in the age of digital tools such as Google Docs, Zoom, and Slack. In fact, according to McKinsey, data collected from a wide range of organizations indicate individual productivity being *higher* than before the onset of the pandemic. On the other hand, collaborative work is more difficult to carry out remotely. It therefore makes sense to review the allocation mix of individual and team workspace. This implies that instead having, say, 80% of office square footage dedicated to individual workstations, 80% of office square footage will be dedicated to conference rooms.

Second, for a growing number of real estate customers, accessibility to a *network* of spaces, rather than access to a single central location, will become important. As comprehensive and highly customized assets for specific group of tenants become commonplace, it will become costlier for operators to attract different *types* of tenants- this loss in asset, tenant, and operator fungibility, explains the rise of branded operators. The incoming shift to greater flexibility and provision of differentiated services means real estate income will become less predictable and less bond-like. The greater operational intensity should increase the asset class’ correlation to the overall economy, undermining the role it has thus far played in institutional investor’s portfolios. Institutional investors will consequently adjust their allocation to real estate. They will also adapt to the industry shift by partnering with branded operators that can maximize the value of the underlying asset by effectively attracting and retaining tenants.

Third, technology will continue to increase the efficiency with which existing buildings are used. This implies the amount of space required for a given number of people, goods, or level of economic activity will be lower. The most common demand projection models, which assume this ‘space efficiency’ rate as constant

may therefore be subject to error. Technology is also reducing the amount of space required for certain uses, such as retail. Technology may therefore weaken demand for real estate as both the efficiency of existing space is increased, and the glut of retail inventory is repurposed for other uses.

The upshot of all of this is that technology is making the real estate industry more competitive. On the other hand, assets can be operated to extract even more value than before. Start-ups, backed by venture capital, will both partner and compete with traditional property companies.

Now more than ever, ‘winning’ in real estate requires a good strategy. In this regard, I found strategy research from Harvard Business School’s Michael E. Porter particularly helpful. Increasingly, competition in real estate is being fought along operational lines. Using Porter’s definition ‘operational effectiveness’ as ‘performing similar activities better than rivals’, what constitutes operational improvements is different for investors, developers, and operators. For investors, it means improving asset acquisition decisions, portfolio diversification, and optimizing the financial structure of transactions to minimize taxes and increase return on equity. For developers, it means cutting on construction costs and reducing construction time. For operators, it means negotiating better leases with tenants and combining these to smooth property income, while cutting on maintenance costs. Importantly, the democratization of PropTech tools means new investors, developers, and operators can meet or even beat incumbents’ operational effectiveness. As real estate companies use the same tools to achieve operational effectiveness, they become increasingly similar to each other, and this results in ‘a series of races down identical paths that no one can win’. To win, a good strategy is necessary.

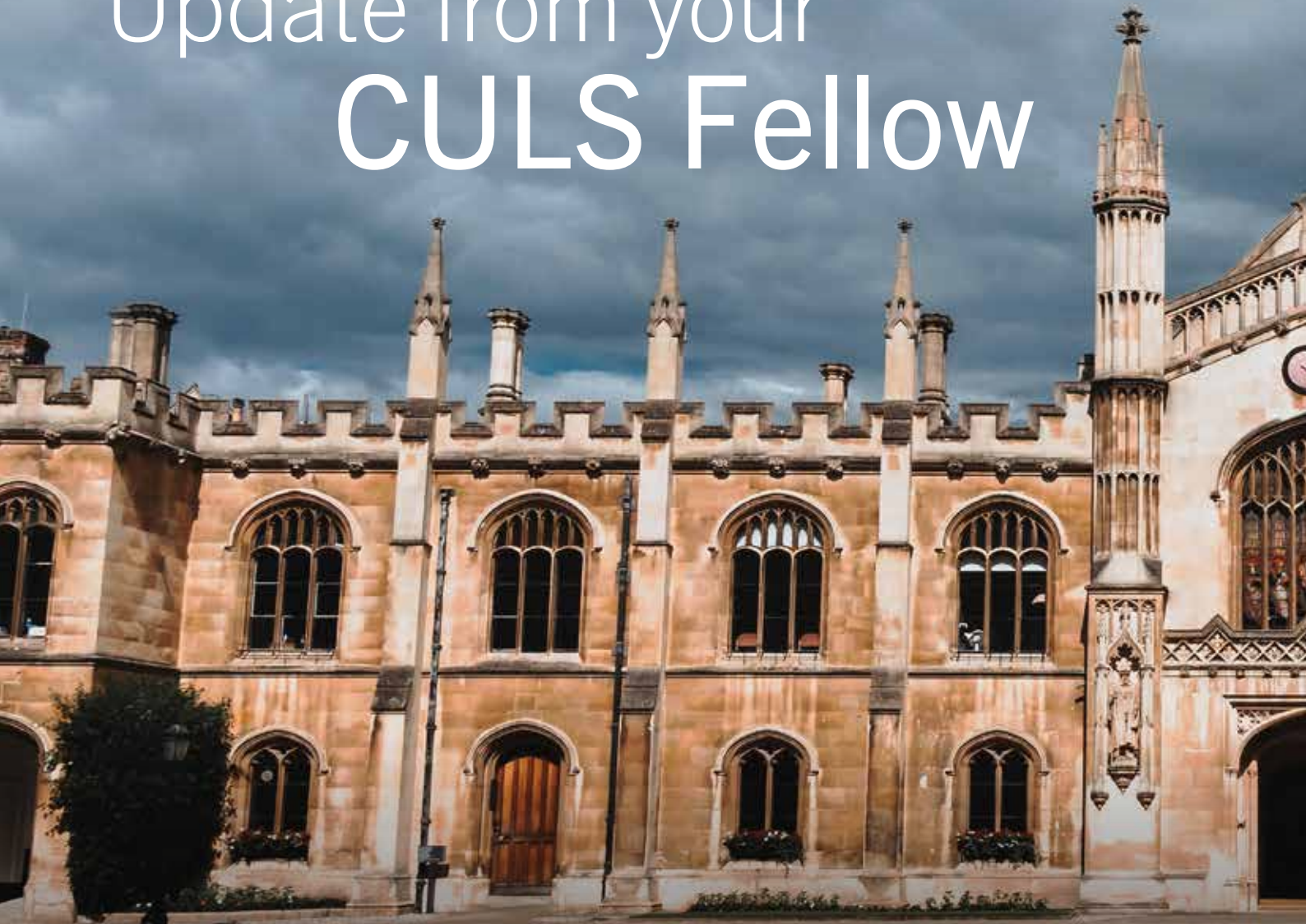
According to Porter, a good strategy has five attributes. These are (1) a unique value proposition, (2) a unique value chain, (3) the inclusion of unique trade-offs, (4) a unique fit between interdependent value activities, and (5) a long-term commitment to strategy implementation. Good strategies, that implement these principles, will look different across different companies, according to their respective constraints. For example, investors (e.g. REITs) may be constrained by narrow investment mandates and legal requirements to distribute profits instead of reinvesting them. New entrants exhibit Porter's attributes well. For example, Common, provides a unique value proposition: it targets young professionals unable to commit to a traditional residential lease on their own by offering a furnished room with a variety of services including cleaning and a number of community activities- all for a price of an unfurnished bedroom in a more desirable neighbourhood. Regardless of WeWork's numerous challenges, the company shows how implementing a good strategy can require sacrificing

some potential customers to attract others. For example, by stopping to serve or reimburse non-vegetarian meals, WeWork took an ethical stand that resonated with its target customers. Thus, to please some customers, a company must risk not pleasing everyone. This clear strategy has enabled WeWork to provide an experience with (symbolising) benefits, regardless of what building it is in.

Looking forward, real estate companies that recognize customers' actual objectives beyond simply the 'space' they require to reach those objectives are poised to take advantage of disruption in the real estate industry. For example, helping corporate tenants accomplish their objective to attract the best talent may be achieved by designing an environment in which employees feel happy, healthy, and appreciated. Figuring out customers' needs and anticipating these by actively monitoring the data they generate is therefore key.



Update from your CULS Fellow



Franz Fuerst
Professor of Real Estate & Urban
Economics
CULS Fellow

Trumpington Street, I felt a great sense of relief to see it basking in the afternoon sun, at least as much as its imposing neighbour (Queens College) allows it.

But enough about me. Or maybe not quite because you may still be curious to find out what else your CULS Fellow has been up to while he was holed up in his humble abode for such an extraordinarily long time, zooming the day away and trying to keep himself and his family sane and out of harm's way.

We live in very strange times! How often have you heard people utter this truism over the last two years? But if time is just an illusion anyway, as some physicists have us believe, then maybe it is not the times but ourselves who have become strange through the bewildering disruption we have endured collectively and individually.

I could certainly attest to this hypothesis, albeit based on a sample of $N=1$. Just the other day, I took a detour to ride my bicycle past our deserted Department building on Silver Street to convince myself that the building still exists outside the boundaries of my imagination and nostalgic ruminations. And as I came around the bend from

The lockdown certainly afforded us academics, as it has most people, the opportunity to reflect more deeply on all manner of things, both in our personal lives and in our larger surroundings. For me, this meant not just writing papers and trying to stay in touch with colleagues and students within the confines of a pixelised rectangle but also probing the underlying assumptions of my research agenda. A good chunk of my previous work deals with the intersection of environmental and financial performance in a real estate context. These are questions such as: Can buildings that have a smaller carbon footprint also be commercially successful? And can companies that are mindful of their civic and ecological responsibilities and avoid doing harm to people and planet also reap sizable profits? The answer appears to be in the affirmative but recently I have been having more and more doubts about the green business case in real estate. Not



only does it seem too good to be true but it may also hide some deep-running fault lines and contradictions that may only become obvious when we roll out the net zero pathways on a massive scale across the entire industry and building stock.

One of my main concerns is that the shift to a greener economy appears to occur whilst we are still holding on to the old paradigms and metrics of commercial success in real estate. In many ways, the ESG agenda and carbon neutrality feels too additive as yet another set of considerations on top of the existing ROEs, ROAs, IRRs and NPVs but does not replace them or even relegate them down the list of key performance metrics. If so, I fear that we will not achieve the necessary reduction in GHG emissions or be able to stop and reverse the other harmful impacts on the environment such as loss of biodiversity and resource depletion.

In this 'additive green world', green buildings, green jobs, green cars etc. are just a further product line alongside the existing ones, leading to an overall expansion of resource use, emissions and environmental degradation with catastrophic consequences. Green bling without the power to make a real dent into our unsustainable emissions trajectory.

The promise of new green technologies is great but also deeply problematic in many cases. For one thing, most technologies that are green and clean in operation are anything but in the early stages of their existence. The resource depletion around lithium-ion batteries for electric vehicles has become something of a cause célèbre lately but there are many more green building

technologies that do not deserve this label when examined from a life cycle perspective. It sometimes seems that the bulk of green products just shift current environmental problems to different places and times but do not truly solve them. Case in point: even the production of building materials from recycled materials requires relatively large energy inputs. The conclusion from all this may be that we need to get a handle on overall consumption and resource use, not just replace old HVAC systems with more energy efficient ones and add a bit of insulation to the walls if we want to achieve net zero within the next ten to twenty years in the real estate industry.

It is encouraging to see that sustainability as an overarching business objective is now being embraced by ever larger numbers of real estate investors and companies. Even the large private equity real estate investors are now all about sustainability. Blackrock has announced that it will double its ESG assets in the next 5 years. While this is laudable, one cannot help but wonder if the enhanced profits accruing from this green strategy may lead to further increases in greenhouse emissions downstream through additional consumption and re-investment in non-sustainable businesses. This effect is then compounded by the actions of some companies and industry bodies that adopt some light green business practices in an effort to pre-empt more decisive regulatory action by governments. If the drastic GHG reduction numbers that we are facing over just the remainder of this decade are to be believed, the real estate industry may be in for potentially the largest transformation in its history, be it via market mechanisms or government intervention or a blend of both. It is also becoming increasingly clear that efforts to increase energy efficiency must be accompanied by more energy sufficiency (i.e. energy conservation) if we want to retain at least a fighting chance of meeting the reduction targets set out for the building sector.

To be fair, these wider concerns may appear too large to tackle for an individual company or investor. However, there are a number of examples that demonstrate what is achievable when a real estate company gets serious about achieving carbon neutrality and minimising their environmental footprint in all aspects of their business. For researchers like myself, these complexities are difficult to measure because we usually need to work with imperfect proxy data (such as building certificates and self-reported metrics) but there is hope that the next wave of empirical studies will be able to discern more clearly between green performers and green pretenders.

Are Future Homes OUR Future?

The Sixth Assessment Report by the Intergovernmental Panel on Climate Change makes for sobering reading. It lays out the scientific evidence that greenhouse gases are rising faster than we thought, that climate is changing more rapidly than we thought, and that changes are getting 'locked into' the environmental system. All of this points to the UK pushing towards a very low (zero?) carbon future.

With homes accounting for a third of our carbon emissions, and with current UK homes having disappointing thermal performance, government policy is focused on making homes much more energy efficient. Enter the Future Homes Standard. While still on the drawing board as consultation ends, this revamping of the standards ensures all new homes will be as close to zero carbon as feasible, or at least 'zero-carbon ready' once the national grid has been decarbonised.

Intended to apply to all new homes constructed after 2025, the new Standard will create homes that reduce carbon emissions by 75-80% compared to the current Standard, with remaining emissions 'offset' by exporting low carbon energy back to the grid and/or removing carbon from the atmosphere (think trees). Is this technologically possible? Would people buy these homes? Would the average Brit be willing to live in such a home?

First, some clarifications:

- The Standard will not reduce carbon emissions today. It will reduce the rate of growth of emissions in the future, although when market turnover replaces older homes with new ones emissions will indeed go down. Until replacement happens any new home, however efficient, just adds to our carbon footprint.
- The Standard focuses on the thermal envelope of a home and the way it is heated, calling for complete electrification of heating (cue the heat pump). It does not explicitly consider plug load, which has been rising as we each buy more 'stuff'. It revises Part F (ventilation) and Part L (conservation of fuel and power). These are two thirds of the solution in homes; good out of the blocks but not the full race. There is some hope that the final third will be captured in a limit on Renewable Primary Energy Demand, at 60 kWh per square metre per year. But that is not clear.
- The Standard does not yet consider the embedded carbon of a new home. This is the carbon released in manufacturing construction materials. Even a very low carbon home will not show any reduction in carbon emissions until this embedded carbon has been 'paid back' through reduced operational energy use.

So now to our questions. Is this technologically feasible? Yes, as current market options such as Passivhaus demonstrate. 80% reduction in energy and carbon is readily achieved by careful attention to (i) thermal insulation, (ii) high efficiency



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windows, (iii) air tightness, (iv) thermal bridges, (v) adequate ventilation through recirculation and heat capture (with the side benefit of preventing damp) and (vi) switching to electricity-based heating (assuming the national grid continues to decarbonise). Such homes have already been built in the UK.

Will people buy them? The glib answer is that people will be forced to buy them if the Standard means these are the only new-build homes on the market. But will they be happy with them; would they buy them voluntarily? It all comes down to cost and comfort. While initial capital cost can be higher for such low carbon homes, operational costs will be significantly lower, especially if there is a carbon tax on the national grid and natural gas. So market acceptance will depend on how people perceive this difference between CAPEX and OPEX. The US is running trials on making mortgages reflective of TOTEX, hopefully reducing the problem of people valuing CAPEX over OPEX due to the time value of money.



But will people live within such a home? What we mean is someone might technically live in a home with the potential for very low carbon, but then live their life in ways that negate this potential. Think opening all of the windows on a cold day to remove the smell of a fish fry. Trials have been run in the UK, where different families are moved into identical, very low carbon homes. We see that almost all of the families achieve large reductions in carbon emissions, but there is still a factor of 2 to 3 difference in the energy use and carbon emissions for home heating by these occupants.

Improved occupant behaviour is therefore key to a successful programme, which is why the Future Homes Standard is accompanied by a Home User Guide (see the template at www.gov.uk/government/publications/home-user-guide-template). The Guide helps occupants understand how their behaviour affects the performance of a new home. It remains to be seen how well this aspiration will be met. In the retrofit space, we find that a third of people use improved insulation to

increase interior temperature, keeping energy use the same as before. That does not reduce carbon emissions. Occupant behaviour is therefore a crucial third piece of the puzzle that includes energy efficient homes and low carbon energy. In fact, the proper hierarchy is behaviour change, then energy efficiency and finally low carbon energy. If we jump right to the energy supply, we are pumping low carbon energy into a sieve. However, even if people initially choose extra warmth over reducing energy use, building homes with low carbon potential is an important step towards carbon neutrality, future proofing new build homes for when behaviour begins to change.

What is clear is that the Future Homes Standard is imminent. Developers, home builders and occupants should start along the path of understanding what those homes will look like, how they will be built, how they will affect the market, and how we will live within them. Standards are the engine of a low carbon future, but we each have our foot on the pedal.

Stemming the Tide:

The Furtive conflict-resilience of Tech-Driven Real Estate in Nigeria

Real Estate is the largest asset category on the planet, but it is ever so slow to 'move'. Despite this seemingly static notion it gives, its shifts have been known to be of global proportions. It is also spatially proliferative in impact, especially in the developed world. Drastic failures of real estate in top global economies can trigger chain reactions that can significantly affect the economy. If the housing crisis of the UK in the late 80's is too far back to remember, the much more significant housing crisis of 2008 in the USA comes to mind very quickly. The message is simple: If real estate goes wrong enough, the global economy can severely suffer. Speaking of Nigeria (and by extension Africa), what keeps this center of socio-economy from falling apart? What keeps the anarchy at bay?

Like other facets of the industrial world, real estate continues to be hugely influenced by technology. With major shifts like big data and artificial intelligence, real estate development has been accelerated globally in various aspects (Braesemann & Baum, 2020). The various shifts of technology have brought about increased efficiency, broader access to markets, faster and easier financing, and a positioning of real estate as a major role player in mobilising people for various sustainable development agendas.

The real estate of Africa is not left out. Over the past decade the development of technology in commerce has been noticeably fast-tracked. Africa has the fastest developing fintech start-up ecosystem in the world, and this has had huge impacts on the real estate sector. Nigeria is the largest economy on the continent and with over 206 million people, it is the most populated. Over the last decade, technology has accentuated its commerce in ways that has seen fintech start-ups achieve market values upwards of \$1billion in under a decade. This, in context, is unprecedented. The use of technology has been visibly noticed

"Things fall apart; the centre cannot hold; Mere anarchy is loosed upon the world,"

W. B. Yeats (The Second Coming, 1919)

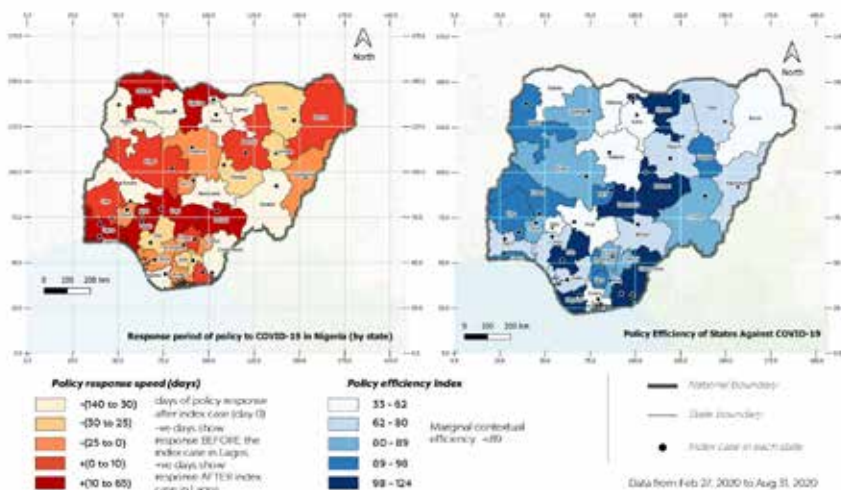


Stephen Ajadi

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Lab of Interdisciplinary Spatial Analysis (LISA)

across the value chain of real estate business in Nigeria and it has held the industry through some challenging times. The effort is noticed from financing to the contribution of professional domains to design, valuation, marketing, and delivery. This shows so much potential for a country with so much land value in terms of housing, infrastructure, and natural resource.

There are, however, setbacks hampering the dreams of real estate development through technology and innovation in Nigeria. The pandemic in Nigeria also slowed down real estate business as construction projects were halted and property development and acquisition took longer. Government policy did not show reliable efficiency across-board (not just health) during the first wave even though Nigeria responded faster and much better to its national index case than many of the most advanced western countries, considering existing problems (see. Fig. 1). This motley efficiency in spatial terms, affected real estate commerce development, especially in states south of the country— including Lagos, that were already hotspots of the industry. Technology (social media and blockchain in particular) offered resilience during this period.



Policy efficiency against COVID-19 in various states of Nigeria (Ajadi, 2020)

Ethno-religious tension, corruption and political instability that play out as violence-based conflict have also been a clear challenge of real estate in Nigeria. Corruption and fraud have hampered the growth of land acquisition in the country. Land grabbing, duplicate/clone transactions, poor security, and poor tax structures from the government are primary concerns.

Conflict has been the main clog in the rise of technology and innovation as a catalyst for real estate development. The IEP (2021) places Nigeria as the third most terrorised country in the world. The increasing insecurity from ethno-religious conflict in Nigeria over the past

decade has pushed the most prospective real estate market in Africa to slow growth. In addition to religious extremism and insurrection, the proliferating attacks of the Fulani herdsmen have spread from the north to the southern part of the country where technology and innovation is highest and fastest. The herdsmen attacks are a push for more land ownership across rural and urban Nigeria through extreme violence and terrorism. The policies of the government seem helpless and even counterproductive to these developments. There have been relative variations, also in how state government policy has not only catalysed the conflict but has picked against tech-driven commerce. The current policies of the apex bank and the finance ministry of Nigeria against fintech finance activities in a bid to stop inflation among other aims, pose a greater threat to the fintech industry and the nation's economy in the long run. The overarching implementation techniques of the policies risk mass discouragement for new start-ups and Foreign Direct Investment (FDI). This raises concern as technology and innovation have been instrumental in democratising power-based access to land and public space in Nigeria. In the last uprising (tagged #EndSars) against the police and bad governance in Nigeria; social media, drones and blockchain technology were employed in mobilising millions of protesters across various land masses around the country. These technologies have since been heavily discouraged by government policy. Crypto trading and other blockchain applications have been banned in the finance sector with a regulative aim to launch a national crypto-currency line. In addition, on the 5th of June 2021, the government banned Twitter indefinitely for accusations of selective opinion control. Social media is a known powerful driver of real estate commerce in Nigeria. The ban of the single application has cost the country \$367 million so far. Conflict in Nigeria has magnified insecurity and social instability, and with new calls of secession, the very existence of Nigeria as a single entity is threatened.

With all these happening the development prospects of tech-driven real estate industry is questioned. Some (Adebiyi *et al*, 2019) hold the position that PropTech is a very expensive venture for investment in Africa—especially Nigeria. That Nigeria is not yet ready for such a change. They cite the factors already mentioned, including growing poverty. While the factors they point out are in fact, valid, their opinions seem to look at PropTech in Africa through a western lens. The social, political, and economic dynamics are very different in Africa therefore the entry point of various disruption systems is different. The hindrances available in Nigeria for instance, trigger various other implementation pathways of technology in the real estate sector. The current boundaries are being pushed legally and illegally.

Unlike in developing countries, social media has been one of the primary tech enhancements of the real estate sector. With many real estate companies hyperactive on social media, the scale of consumer-access has been increased significantly which has accelerated competition in supply. Digital payment and infrastructure management platforms have also been a noticeable resistance to the industry decline. Despite the existing bottlenecks, start-ups like Wealth.ng (est. 2010), Chaka (est. 2019), CowryWise (est.2017), Eden (est. 2019), and the rapidly growing Flutterwave (est. 2016) etc. have enhanced digital processes of procurement across the real estate value chain. These platforms have grown even through Nigeria's most challenging years (2019-2021) in

the past decade. These two enablers have helped bring about competing pricing and have been part of the few self-replicating strategies through which the Nigerian real estate industry is actively resisting decline—building a core for the Nigerian real estate economy. But for how long can this 'centre' hold?

The peculiar observation is that despite the existing hurdles of tech-induced real estate in the country, the industry is not declining though direct growth is absent. Most of the country's FDI is targeted directly or indirectly at real estate and related infrastructure. FDI has dropped but has also picked up over the years. In 2019 prior to the pandemic, FDI decreased by 43% in Nigeria and since 2019 Q4 to 2021 it has bounced back to a flat growth increased slightly from \$2.3b in 2019 to \$2.4b in 2021 (UNCTAD, 2021:41). Although Africa currently only accounts for 1% of the global PropTech Market, the continent's tech start-up wave is undoubtedly one of the fastest on the planet. Funding has also been discovered not to depend on cluster size/density of firms. As Braesemann & Baum (2020), show, countries like India and China have relatively more funding despite the paucity of PropTech firms. This phenomenon opens more prospects for Africa and in turn Nigeria. In Africa, the FinTech ecosystem is even more developed than PropTech, despite the setbacks that are not found in other parts of the world (KFR, 2020).

The resilience of technology and innovation in Nigeria's real estate market to push growth despite the ridiculously great challenges of the pandemic and conflict is worthy of attention. There are of course questions moving forward. How long can this hold last, especially with the growing vulnerability from conflict? How long till FDI begins to drop again? Will the record speed of tech and innovation development in real estate continue to help reinforce resilience? As for now, things have not fallen completely apart but the cracks are getting deeper. The center is still holding—the growing innovation and tech influence of real estate, as well as the mega footprint of demand in Africa's biggest economy, is still present. Time remains the mystery. For a country that is socio-politically one of the most unstable states in the world, one can only imagine the levels of tech-driven real estate development, if these pullbacks are subdued or eliminated.

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Who will pay for Nature-based Solutions?



Ian Hodge
Professor of Rural Economy

Land is increasingly taking centre stage in debates about climate change, now increasingly characterised in terms of 'Nature-based Solutions' (NbS). Changes in land use provide opportunities not just to address climate change but also to restore biodiversity, mitigate flood risk, reduce water pollution, enhance landscapes and promote access to nature. The critical need is emphasised in the discussion around COP26 and the vital importance of nature has been elaborated by the Dasgupta report and revealed through the Covid pandemic.

However the potential cost of implementing the required changes is huge. WWF assesses that, globally, the investment needed to preserve and restore ecosystems requires between US\$300 to US\$400 billion, while at present only US\$52 billion is being invested. Government will need to provide a major part of this, but much depends on private finance too.

Making a 'market'

However, the problems in raising private finance to support investment in ecosystems are well known. The outcomes sought are predominantly public goods that are generally not capable of being traded in markets. So what is required in order to incentivise private investment? This raises fundamental questions about the nature of markets and incentives. As noted by Daniel Bromley (1997) "There is no such thing as the 'Market'. Rather, there are infinitely many ways of constructing domains of exchange - each one reflecting prior collective notions and expressions of who counts, and what is valuable or useful".

A private market involves a voluntary exchange between a willing seller and a willing buyer. But potential markets for ecosystem have some curious characteristics. The full nature and extent of the 'outcome' delivered in practice may be unknowable. Even apparently simple projects, such as tree planting, have unknown impacts. They will depend on the particular choice of species and the individual tree's genetic make-up. They depend on the context and condition of the planting site. They depend on future management, weather and disease. There may also be unexpected impacts. For example, trees can be a source of nitrous oxide or methane emissions or there may be unpredicted impacts on biodiversity. And of course, the long term impacts will depend on what ultimately happens to the timber. While we are used to the idea that all futures are essentially unknowable, the outcomes in this context are particularly uncertain. But despite this, many people are still willing to pay to support tree planting.

So there is a question as to how accurate does information about future outcomes need to be in order to persuade stakeholders to pay for their provision? In fact, it is often not the direct outcome of the change in land use that is important, but rather the belief of a third party or wider public that a particular outcome can reasonably be expected to be delivered that matters. And the purchaser may often even have no interest in whether or not it is delivered or any incentive monitor it.

Who could provide finance?

In this regard we can perhaps envision three separate domains of exchange within which private actors can be motivated to invest in NbS.

In some contexts, payment for NbS can reduce a particular cost or risk faced by an organisation. A water company might pay for a cleaner water to reduce treatment costs. An infrastructure owner might pay to mitigate the risk of flood damaging a particular facility. In this context the delivery of the outcome does matter. The potential benefits needs to be well defined, predictable and backed up by science. The evidence needs to persuade the decision-maker and arguably shareholders or those to whom the decision-maker is accountable. A more general approach might be taken through collective action by groups of companies sharing common risks. For instance, insurance companies might act together to reduce flood risk. But this opens the potential for free-riding and raises a question of whether competitors can legitimately collaborate.

A second context, offsetting, arises where an organisation needs to offset its climate impact in order to achieve a defined climate target. In this case, the organisation requires independent certification of the offset that will be widely recognised and accepted. The actual outcome of the NbS investments in terms of climate mitigation may not be of concern to the investor, except to the extent that a public failure could be a source of reputational damage. Thus a decision on whether to purchase a carbon credit will depend on the reputation and credibility of the organisation providing the assurance and certification as much as on the details of any particular project. This then takes us into the standard requirements for measurement, reporting and verification by an accreditation body and the reputation of certification schemes such as the Woodland or Peatland Codes.

The third context, voluntary contribution, arises from a desire on the part of an investor to do, or at least to be seen to do, 'good'. In this case too, confidence in the actual outcome may not be critical. Indeed, there is the possibility that it may not be predictable at all so long as the investment is in pursuit of a recognisable and laudable mission. There is a parallel here with sponsoring an activity in a university. It is not, for instance, possible to quantify the outcome of an endowed professorship. This type of investment might respond more to charismatic projects, or indeed project leaders, than to technical details. The NbS projects sponsored in this way may be more speculative, exploring new techniques, or driven more by wider social benefits than by measured carbon impacts. This sort of approach might, for instance, be suited for funding rewilding schemes where ultimate outcomes are unknown or in support of trusted organisations.

In practice, of course, areas of land do not generally deliver a single service but rather have potential to provide more complex bundles of services. Wetland restoration or sensitive afforestation can offer carbon sequestration, biodiversity conservation, flood mitigation and public access. Each of these separate services could potentially be funded by different types of investors with differing criteria and objectives. Local flood mitigation might be funded by an infrastructure owner. Carbon sequestration through an offsetting scheme. Rewilding by a private philanthropist. This implies a requirement for groups of landholder to act collectively to achieve sufficient scale on the supply side and collectives of investors to fulfil the investment requirements on the demand side to make the overall scheme feasible. Thus, NbS schemes will need to be designed and marketed so as to divide up the investment opportunities in ways that can appeal to the different types of investors.

The critical role of government

There is in all this still a critical role for government. There will be elements of NbS schemes that cannot be funded privately, especially where the benefits have the strongest public good characteristics. This will require public co-funding to unlock the funding from the private sector. We look to the Environmental Land Management Scheme to be used imaginatively in this way. Government also has a responsibility to ensure that existing regulations don't impede the engagement of particular sectors, such as in the water industry, and to guarantee the credibility of certification schemes. There is considerable public scepticism about the legitimacy of offsetting and government needs to ensure a high standard of science, adherence to strict standards and avoidance of double counting. If such schemes look like green washing, they will fail.

CULS Careers in Real Estate, Planning and Environment Fair 2021

CULS Careers Fair, 28th October 2021, kindly sponsored by Cambridge Land Economy Advisory Board (CLEAB), Deloitte and Eastdil Secured



Louise Sherwin
Director, Real Estate, Deloitte
CULS Honorary Careers Officer
Girton (2001-2004)

The 2021 Careers Fair was one of our best yet. There was an incredible buzz at the Guildhall and it was busy from start to finish. It was clear that there was much excitement to be back, making new connections in person.

The success of this year's event was also driven by the wide range of employers attending. Alongside roles in surveying and real estate finance, it was great to also showcase opportunities in areas such as the public sector, prop tech, the environment and planning.

Promoting diversity and inclusion within the built and natural environment is a priority for CULS and it was our pleasure to welcome Real Estate Balance and Black Professionals in Construction Network to the Fair for the first time. Their stands were busy throughout and it was clear that students were very engaged.

Several CULS members kindly attended to share their experiences and we are very grateful to these individuals for generously sparing their time. The RICS, RTPI and Cambridge University Careers Service were also on hand to provide much needed guidance.

With a combined 80 years' experience in real estate banking, Ian Marcus OBE and Jon Zehner, gave a short talk sharing some of their reflections and tips for success. The event then rounded off enjoyably with networking over drinks and canapes.



For the 2022 Careers Fair, we will be continuing to focus on broadening our employer offer to cater for a full range of career opportunities in real estate, planning and the environment. Please do not hesitate to contact Ali or I if you would like to book a stand at the event or would be willing to join us on the day to talk to students.

2021 Attendees

Apollo
Arup
Bidwells
British Land
Brockton Everlast
Brydell Partners
Built-Id
Cambridge University Careers Service
Cambridge Land Economy Advisory Board
Cambridge University Land Society
Carter Jonas
CBRE
Department for Levelling Up, Housing and Communities
RH & RW Clutton
Deloitte
Eastdil Secured
Fifth Wall
Grosvenor
Homes England
JLL
Knight Frank
LaSalle
L & G
Principal Real Estate Europe
Real Estate Balance
Revcap
RICS
Royal Town Planning Institute (RTPI)
Savills
Transport for London



CULS Student Prizes

Prize	Awarded By	Amount	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Tripos									
The Noel Dean Prize for best overall performance in Part II (3rd year TRIPOS)	CULS	£750	Leo Kirby	Aleksandra Pedraszewska, Newnham	Samuel Porter	Lucy Merrill/Dana Poon	Ryan Pringle (Trinity)	Isabelle Monnickendam (Jesus) Rebecca Griffiths (Murray Edwards)	Rohan Cardoza
The Gordon Cameron Memorial Prize for best performance in Paper 7 (Regional Economics and Policy)	CULS	£500	Joseph Strange	Arshad Balwa, Homerton Shilpita Mathews, Gonville & Caius	Gabriela Stoimenova, Ruthanne Soh	Patricia Behling	Aadil Siddiqi (Trinity Hall) Yi Lim (Fitzwilliam) Clara Calderbank (Robinson)	Arthur Bessis (Fitzwilliam)	Emily Cox
The Mike Turner Prize for best performance in Paper 15 (Advanced techniques in finance and investment for real estate)	CULS	£500	Rebecca Daniels	Aleksandra Pedraszewska, Newnham Sally Monson, Clare Ben Fryza, Jesus	Beatrice Chan	Rohan Choudhuri	Alex Bird (St Catherine's)	Alexander Partelides (Magdalene) Xiaoyu Weng (Newnham) Ka Mok (Newnham)	Ms Qinnan Yao Miss Tia Chen
The Jeffrey Switzer Prize for best performance in Paper 14 (Planning Policy and Practice)	CULS	£500	Richard Alty	Zachary Freud, Fitzwilliam	Harry Lewis, Sarah Galley, Shilpita Matthews	Kevin LI	Pao Maneepairoj (Christ's)	James Hayes (Homerton) Gabriel Kaufmann (Girton) Mahid Qamar (Homerton) Rebecca Griffiths (Murray Edwards) Yi Lim (Fitzwilliam)	Miss Daria Artioukh Mr Tyrone Lee
The CULS Prize for best overall performance in Part 1B	CULS	£500	-	Ayrton Dhillon Selwyn	Ariane Dupas	Patricia Behling	Aadil Siddiqi (Trinity Hall)	Rohan Cardoza (Selwyn) Nick Sweeny(Jesus)	Miss Yulim Kim
The Nigel Allington Prize for Best overall performance in Paper one	CULS	£250			Patricia Behling	Anna Kelsall	Nicholas Sweeney (Jesus)	Su Low (Newnham)	Dan Gilbey Jesse Gersher Connelly Harry Houillon Michael Kolawole
The Douglas Blausten Award for the best performance in the Real Estate Finance MPhil dissertation.	CULS	£500	Florian Unbehaun	Miss Quanzhi Yang Queen's College	Maximilian Exler		Miss Isabel Ottewill of Hughes Hall	Mr Nyshaal Gopal	Stuart Holligan
The Alistair Ross-Goobey Award for best performance in the Real Estate Finance MPhil	CULS	£750	Florian Unbehaun	Mr Luke Duckworth. St Edmund's College	Philip Latham		Mr Daniel Riahi of Hughes Hall	Carl Von Hardenberg (Girton)	Stuart Holligan

CULS Committee

CULS Committee Members	CULS Position	Company	Position
Ian Marcus OBE	President	Senior Advisor	Eastdil Secured
Dominic Reilly	Immediate Past President	Howard Ventures	Non-Executive Director
Dan Nicholson	Senior Vice President	Great Portland Estates	Executive Director
Aubrey Adams OBE	Vice President	L&Q Housing Association	Chairman
Lauren Fendick	Honorary Secretary	Taylor Wessing	Partner
Erik Ruane	Honorary Treasurer/ Hon Membership Secretary	Real Estate Business Consultancy Services Ltd	Principal
Werner Baumker	Honorary Press Secretary	Howard Group	Group Director - Property
Louise Sherwin	Honorary Careers Officer	Deloitte	Director
James Taylor	Honorary Member for the Regions	Adapt Real Estate	Founding Partner
Dr James Campbell	Committee Member	Department of Architecture	Head of Department
Oliver Harwood	Committee Member	Rh & RW Clutton	
Professor David Howarth	Committee Member	Department of Land Economy	Head of Department
Roddy Houston	Committee Member	Government Property Agency	Deputy Director
Ami Kotecha	Committee Member	Co-Founder AREP, Managing Director AmroLiving	Co-Founder
James Lai	Committee Member	CallisonRTKL	Associate Director
Colm Lauder	Committee Member	Goodbody	Senior Real Estate Analyst
Noel Manns	Committee Member	The Pollen Estate	Chairman
Rod McAllister	Committee Member	McAllister ADF	Director
Sophie Jenkinson	Committee Member		
Brian Waters	Committee Member	BWCP	Principal
Honorary Vice Presidents	CULS Position	Company	Position
Dame Kate Barker CBE	Honorary Vice President	Taylor Wimpey PLC	Non Executive Director
Douglas Blausten	Honorary Vice President	Carter Jonas	Consultant
Stuart Corbyn FRICS	Honorary Vice President	Retired	
Professor Sir Malcolm Grant CBE	Honorary Vice President	NHS England	Chairman
Spencer de Grey CBE RIBA	Honorary Vice President	Foster & Co	Co Head of Design
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Jeremy Newsum FRICS	Honorary Vice President	Grosvenor Group	Trustee
Liz Peace CBE	Honorary Vice President		Adviser - Property, Politics and the Built Environment
Peter Pereira-Gray	Honorary Vice President	The Wellcome Trust	Chief Executive
Mark Preston	Honorary Vice President	Grosvenor Estate	Chief Executive, Grosvenor Group and Executive Trustee

Upcoming CULS Events

Please book tickets online (www.culandsoc.com) or contact the Society Secretary, Ali Young (01638 507843, info@culandsoc.com).

Thursday 2nd December
8.30am - 9.30am

Climate Innovation

Webinar

Thursday 13th December
8.30am-9.30am

Decarbonisation in the
Residential Sector

Webinar

CULS AGM and Annual Dinner
6th July 2022. 4pm - 10.30pm

c/o Fitzwilliam College, Storey's Way,
Cambridge CB3 0DG



CULS Membership



Erik Ruane MA Hons MRICS
CULS Hon. Membership Secretary
(also Hon. Treasurer)

As at the end of the academic year in June, CULS had an active membership approaching 1,000 ranging in age from new undergraduates to centenarians. The membership network continues to evolve with increasing numbers of international members joining the cohort living and working in the UK metropolises and regions. CULS is a truly global lifetime friendship network of alumni and students of Land Economy, Real Estate Finance and Architecture as well as many other CU graduates of other fields now involved in the real estate industry.

Through seminars, lectures, tours and dinners, CULS provides excellent learning, social and networking opportunities for members. In addition to some administrative costs of organising these events for members' enjoyment, CULS also plays an important role in support of staff and students in the Land Economy and Architecture Departments of the University. For instance, CULS funds Tripos prizes, provides financial support for two fellowships and has been, and continues to be, available to provide financial support for relevant student Tripos dissertations.

The Committee appreciates members ongoing support for the Society for which, in these straitened times when some of the Society's regular revenue streams are unavailable, subscription revenue is and will be vital to the long-term health of the Society. In recognition, the Committee has continued to postpone for the time being the review of subscription rates, originally scheduled for Autumn 2020, which will be held as per the past four years as follows:

- | | |
|---|--------------------|
| • Full members working and/or living within 100 miles of London (Charing Cross) | £75 inc VAT |
| • Full members working and living over 100 miles of London (Charing Cross), optional reduced rate | £55 inc VAT |
| • Concessionary & International members and over-65's | £20 inc VAT |
| • Current students and first year post-graduation | FREE |

Subscriptions may be paid either by bank standing order or securely via the website www.culandsoc.com. All membership/subscription enquiries should be addressed to me or Ali Young at culandsoc@alibrinkley.co.uk. If you do move home or business, please take a moment to update your details on the website to stay in touch – a Society can only ever be as strong as its members!

As for so many other organisations, the pandemic has curtailed physical gatherings and CULS has had to adjust most of its events offering to virtual/online. With the easing of restrictions, some events can with effect from Autumn 2021 be held physically. Where feasible, the Committee hopes that many events can be offered with both physical and online options.

The CULS is also extremely grateful to many corporate businesses for their continuing financial sponsorship and logistical support to the Society.



Upcoming Whitehall Group Events

Thursday, 9th December, 2021 2.30 - 3.00pm	Subject: To be confirmed Dr. Nigel Gould-Davies , Strategic Survey and Senior Fellow, Russia and Eurasia at International Institute for Strategic Studies	On-line Webinar
Tuesday, 18th January, 2022 12.30 - 2.30pm	Subject: The future UK urban planning, regional development and Labour views on addressing the wider housing shortage Clive Betts MP , British Labour Party politician and former economist	WG Lunch
Wednesday, 26th January, 2022 2.30 - 3.00pm	Subject: The Anglo-German relations - new year perspectives from the CDU David McAllister , MEP	On-line Webinar
Thursday, 17th February, 2022 12.30 - 2.30pm	Subject: Real Estate's Climate Problem and Technology Solution Roelof Opperman , Partner - Co-Head of Europe, Fifth Wall	WG Lunch
Thursday, 12th May, 2022 12.30 - 2.30pm	Subject: To be confirmed Dr. Nigel Gould-Davies , Strategic Survey and Senior Fellow, Russia and Eurasia at International Institute for Strategic Studies	WG Lunch

The Cambridge University Land Society
would like to thank the following for their generous support in 2020–2021



