

**ENVIRONMENTAL
AND SOCIAL
RESPONSIBILITY**

2012/13

AN INTRODUCTION

In 2012, Building Design magazine recognised the UK's most influential people in sustainability and the environment by naming its 'Top 100 Green Leaders'. Max Fordham, the man who established the building services engineering practice that bears his name, featured in the top 10. Alongside such luminaries as James Lovelock, Peter Clegg, Bill Bordass and Paul Morrell, Max was acknowledged as 'a true pioneer' in environmental design in buildings.

Max established the practice in 1966 and we have been at the forefront of sustainable design ever since. It is in our DNA. Max was doing it before it even had a name, all-the-while proving that environmental design could also be beautiful.

Our approach to social responsibility has likewise been intrinsic; something that comes with the quality of people that have joined the practice over generations. Within this document you will find the extent to which we now measure, monitor, encourage, promote and practice environmental and social responsibility. We're not perfect, far from it. But we are proud of our endeavours and continually strive to improve.

- Guy Nevill, Senior Partner responsible for Environmental Management

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OUR PHILOSOPHY

Environmental and Social Responsibility is a broad-based business movement that encourages companies to take responsibility for the impact of their activities on customers, employees, communities and the environment.

The construction industry is more concerned with improving sustainable practice than ever before. It's a concern we share at Max Fordham.

Sustainability was the founding principle of our Practice and it still guides us today. We remain dedicated to delivering the most sustainable engineering solutions possible.

But our sustainability philosophy runs deeper than that – we consider sustainable solutions in everything from our daily recycling to the way we develop our people and run our business. We consider both our impact on the environment and upon the people in it. We measure that impact and strive to reduce it wherever we can. We strive for positive outcomes.

OUR PEOPLE

Our Practice

In 2001, Max Fordham became a Limited Liability Partnership; one of the first British engineering consultancies to do so. Once a member of the team has been an employee for a period of about five years, they are offered partnership in the Practice.

There are more than 160 on the team, and nearly 100 are partners. In this way, Max Fordham is owned and run on the principles of democracy, inclusiveness, integrity and fairness. But it's not just the partners' voices that are heard. We believe everyone who works with us, regardless of position, is contributing to our success and entitled to have a say in the way the Practice is run. Max himself said, 'it's not a profit-sharing scheme, it's a responsibility-sharing scheme'.

Our work-life balance

That shared responsibility extends to an effective and equitable balance between our working lives and our personal lives. Everyone at the Practice is paid for the hours that they work. Flexible working arrangements to cater for carer needs, family commitments, medical necessities and study requirements are common-place.

Trust is a cornerstone of the culture at Max Fordham. Our hierarchy is very flat and we support and cooperate with each other. The success of our approach is evidenced by many awards, including the best engineer in the 2012 and 2010 Building Magazine Good Employer Guide and the CIBSE Best Mid-Sized Employer of the Year 2012.

Our diversity

A visit to any one of our offices will confirm that Max Fordham people come from all walks of life. We are firmly committed to equal opportunity and we simply recruit the best person for the job whatever their background. Engineering as an industry lacks the diversity of many other industries, with particularly low rates of participation by women. Max Fordham employs nearly twice the industry average of females and supports the WiBSE (Women in Building Services Engineering) initiative.

We do not undertake any formal equalities monitoring. We do not ask applicants or members of the Practice to provide us with demographic data because, as a matter of principle, we think that questions that are not directly related to an individual's ability to contribute to the Practice are at odds with our commitment not to discriminate.

Our growth

Max Fordham is, once again, growing. Following contraction at the on-set of the financial downturn that saw us lose a small but significant number of staff, we have continued to grow in numbers every year since 2009. We believe the way we treat our staff is represented in a turnover rate lower than not only the private sector, but across all sectors.

	Max Fordham		CIPD Annual Survey Report 2012	
	2010/11	2011/12	All Sectors	Private Sector
Average size of workforce	135	165		
Turnover rate*	10.3%	9.13%	12.7	16.1
Retention rate**	87.8%	88%		

*Turnover rate is the percentage of staff out of the total workforce that left the practice in the set time period.

**Retention rate is the percentage of staff with one year or more experience at Max Fordham, out of the total workforce.

OUR WORKPLACES

Our head office is 'The Rotunda', located in Camden, London. It is itself an example of adaptive reuse of existing building stock. It was once the home of Collard and Collard Piano Co. and has been a local Camden landmark for more than 160 years.

Our other offices are located in Cambridge and Edinburgh, with a new office recently opened in Manchester. For an engineering practice built on a legacy of sustainability, we recognise that it is important to practice internally what we preach externally.

We have 160 staff across our offices and each location presents its own challenges when it comes to sustainability and reduction of carbon footprints. But our staff is committed to working with our landlords to make their own buildings more sustainable.

The Rotunda - Camden

The Rotunda is an integral part of life at Max Fordham. We have been resident here in The Rotunda for nearly 30 years. It has plenty of character but, as you would expect from a 160 year old, listed, circular building, running it efficiently does present some challenges.

Far from being daunted, we see this as an exciting challenge and another opportunity to understand more about how buildings work. We have recently negotiated a 'Green Leases' with our landlord, installed Photo Voltaic cells on the roof to generate solar-powered electricity, and will have installed secondary glazing on all internal windows by the end of this financial year. This investment will dramatically improve the building's environmental performance.

Cambridge

The Cambridge office was established in 2001. Electricity and gas consumption continues to fall despite the office taking on more personnel in the last year. Our Cambridge presence is expanding at such a rate that the search has begun for a new office to accommodate the growing numbers.

Edinburgh

We originally opened our Edinburgh office in 2002 and moved into our current premises in 2005. The listed Georgian building in central Edinburgh struggles to cope with the rigours of harsh Scottish winters and the Practice has made some investment to increase the comfort and the sustainability of the building.

This year, instead of battling the freezing temperatures and icy drafts, we're trialling some secondary glazing to increase the performance of our building's fabric. The simple glazing, a film blind which can be pulled down when needed, helps improve the building's air-tightness, keeping heat in so we're able to keep radiator use down.

Our targets

In March 2010 we were certified to ISO14001, a management system which lets us use all our expertise and passion for sustainability while encouraging creativity and action (our recently opened Manchester office is not yet certified under this standard, but will be shortly).

We participated in the 10:10 Campaign to reduce our carbon emissions from burning fossil fuels on site, our use of grid electricity and our air travel energy consumption by 10% throughout 2010. We achieved this target, actually reducing consumption by 30%, and used it as a benchmark for further improvements in our performance.












As our practice has grown in numbers, our per person consumption of power, lighting, heating and travel-related consumption has continued to reduce.

To help us achieve this we:

- took (and continue to take) weekly readings to understand the metabolism of our buildings;
- changed power-off settings on computer and other electronic equipment;
- used our knowledge of building behaviour and installed more sophisticated heating controls;
- encouraged members of the Practice to dress appropriately for the weather; and,
- encouraged alternatives to air travel wherever possible and promoted video conferencing.

Our results

The emissions figures are calculated using version 1.2.1 of the 2010 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting. We use the conversion factors for carbon dioxide equivalence, which makes allowance for methane and nitrous oxide emissions as well as carbon dioxide. Some of the data below is only for certain offices, but we are looking into ways of including all three offices for all the data as soon as possible.

	2010/11	2011/12	Change	
Average Headcount	135	165	22%	
Utilities				
Electricity use*	150,244 kWh 89,197 kg CO ₂ eq	157,389 kWh 93,439 kg CO ₂ eq	4.7%	
Gas use*	171,766 kWh 34,619 kg CO ₂ eq	124,857 kWh 25,165 kg CO ₂ eq	-27%	
Water use**	1,029 m ³ 350 kg CO ₂ eq	969 m ³ 329 kg CO ₂ eq	-5.8%	
Waste**				
Total waste produced	9,626 kg 10,800 kg CO ₂ eq	8,756kg 9,987 kg CO ₂ eq	-9% -7.5%	
Recycling rate	58.8%	61.4%	-4.4%	
Travel***				
Business flights	73,228km (104 flights) 10,530kg CO ₂ eq	180,879km (107 flights) 21,925 kg CO ₂ eq	147% 2.8% 108%	
Commuting	695,888km 61,686 kg CO ₂ eq	917,286km 76,881 kg CO ₂ eq	31.8% 24.6%	
of which by bike or on foot	131,008km 18.8%	108,376km 11.8%	-17.2% -9%	
by bike, on foot or public transport	599,840km 86.2%	823,216km 89.7%	37.2% 3.5%	
Total	207,183 kg CO ₂ eq	227,726 kg CO ₂ eq	9.9%	

*London & Cambridge offices ** London Only ***All three offices.

The figures

Overall, the Practice is trending in the right direction across key indicators of in-office environmental performance. Where the numbers are moving in the opposite direction than we would like (business flights, electricity usage, etc) can be attributed to the growing size of the Practice and the increasing workload in Europe and the Middle East.

Our commute

A part of every working day is the journey to and from the office. Everyone's journey is different of course, and we survey everyone on an annual basis to measure the impact of our commuting.

As a natural consequence of the expansion of the Practice, we are travelling more commuting kilometres than in previous years. However, our number of public transport/bike/foot miles has increased markedly, up from 600,000km in 2011 to over 820,000kms in 2012.

We are continuing to encourage bike riders with a secure bicycle shed and hot showers, and we promote the Government cycle to work loan scheme.

All-in-all, 89.7% of trips to work are completed via methods other than the automobile.

Our suppliers

We are always looking to reduce the embodied energy of products that we buy, and we identify local suppliers to reduce miles whenever we can. Some of our relationships with local traders have been established for many years, and we enjoy knowing that we support locals while also reducing our carbon footprint.

The people we buy from are left in no doubt that environmental performance is very important to us – both ours and theirs. We work together to develop sustainable solutions whenever we can, ranging from having our milk delivered in reusable glass bottles to closed loop supply chains for paper and using bicycle couriers.

There are cheaper ways to buy electricity, but we choose only renewable UK sources. We are shareholders of our electricity provider, Green Energy UK, taking an active role in shaping our energy supply. Additionally Green Energy UK reinvests profits into expanding the supply of UK renewable sources.

OUR WORK

Our teams

Sustainability is central to every project we work on. All of our engineers are trained to think creatively and sustainably. Beyond our core service of Mechanical and Electrical engineering, we also provide value-add and stand-alone sustainability services.

Sustainability Consultancy

There are many different factors that affect sustainability in the built environment. Whether it be water infrastructure at a regional scale or embodied energy in building materials, there are many things to consider to maximise sustainability. Our team of Sustainability Consultants take an analytical and rigorous approach to increasing the level of sustainability in any project; we help clients make choices that make a project as sustainable as possible within the brief. This includes the use of the Sustainability Matrix, a communications tool that helps clients determine what level of sustainability they want for their building. We gave the Matrix away as a free pull-out in five successive editions of the Architects' Journal.

BREEAM

Max Fordham's team of 14 BREEAM Assessors are mostly practising engineers. BRE now allows Assessors to assess their own jobs, but we are committed to maintaining objectivity in our role as independent Assessors. As a Practice Max Fordham has delivered 2 BREEAM Outstanding buildings and 7 BREEAM Excellent buildings to date, including 2 of the highest rated schools in the UK in the last year, and the highest rated public library in the UK.

Sustainable Masterplanning Advice

Sustainability objectives are best met when they are integral to a masterplan; considered from the outset rather than an afterthought. We bring various tools to help clients define their environmental, social and economic sustainability objectives. To support architects and urban designers in meeting these objectives, we assemble teams of engineers and scientists, as necessary, to bring rigorous and evidence-based analysis of environmental site planning and infrastructure.

Soft Landings

How do you know if a building's design will 'work' once it's built? Soft Landings enhances the conventional design and construction process to deliver buildings which work better from day one. Easy-to-use and comfortable to occupy, Soft Landings means lowers running and maintenance costs. Max Fordham provides an industry-leading Soft Landings approach. Employing it from early design stages ensures a building that, when complete, better caters for building managers and occupiers. The Soft Landings project team then remains involved for a period after completion to help them get the most out of their building and to ensure it is operating at its full potential.

Our projects

Since 1966 Max Fordham has been engineering buildings that work. Our projects tell the story of this commitment.

We work across a broad range of sectors and building types, from housing and offices, to museums and sports facilities. international award winning projects, such as MAXXI in Rome which recently won the Stirling Prize, to smaller, innovative experimental projects which allow our engineers to solve problems they may not usually face. The three projects below give a perspective on our range.

The Hive, Worcester

The Hive, Worcester is the first fully integrated university and public library in the UK. It also houses the county archives and archaeology service, the local history centre and local authority hub. The building is low energy, a result of our passive design approach which cuts energy use to half that allowed under building regulations.

The distinctive roof cones serve to exhaust warm air and introduce daylight deep into the building. Cooling is provided by water from the nearby River Severn running through pipework embedded in the concrete ceilings. Sustainable thinking runs through every detail of the building. To that end it has achieved a BREEAM Outstanding rating (86.40%) for the final post construction certification. This result is testament to the commitment and collaboration of the design team and the contractor on this complex PFI project.

Brockholes

The Brockholes Visitors Centre has been awarded BREEAM Outstanding at design stage, the highest environmental standard for best practice in sustainable design from the UK Building Research Establishment. The project is near zero-carbon both in use and production, with a preference for locally sourced, natural and recycled materials as well as on-site energy generation and waste treatment.

The Centre, which is built on a 'floating world' of recycled concrete pontoons within 106 hectares of mixed wetlands and ancient woodlands, opened in spring 2011.

Transforming Tate Modern

We continue our long standing relationship with Tate, this time on the expansion of the Tate Modern in London. Max Fordham is working with renowned architects Herzog & de Meuron, with the first stage, 'The Tanks' galleries, opened in the summer of 2012.

Deputy Director at Tate, Alex Beard said, "the building will be a model of environmental sustainability, setting new benchmarks for museums and galleries in the UK. It will draw the majority of its heating and cooling energy needs from the waste heat emitted by EDF's transformers within the adjoining switch station and by tapping into the groundwater resource of the River Terrace Gravels surrounding the building... The new building is predicted to use 54 per cent less energy and generate 44 per cent less carbon than current building regulations demand."

Woodland Trust

The headquarters for the Woodland Trust in Lincolnshire provides offices and meeting space for up to 240 staff. The aim for the 2,800sqm headquarters was to create a highly innovative and sustainable building within a modest budget. The building's BREEAM Excellent rating shows we met this goal.

Our integrated strategy, developed with the architects and structural engineers, produced an innovative solid timber building with concrete panels for thermal mass; allowing natural ventilation with minimal concrete. The difference in carbon emissions between the sequestered carbon of the timber frame and the emissions of an equivalent concrete framed building is equal to about 10 years' worth of the emissions generated by running the building. This is helped in part by the high levels of daylight and simple lighting solution, as well as the IT strategy.

OUR SHARED THINKING

Max Fordham is embracing new media forms to both promote our work and share our knowledge. Recent conversations on Twitter serve to reinforce the esteem the practice is held in and the effect Max himself had on shaping the industry. When he founded the Practice, he pursued a new approach to engineering practice based on his own insatiable curiosity about how buildings work. We continue with the same philosophy.

“Very chuffed to have @MaxFordhamLLP following us. The history of #BuildingPhysics can be traced back to Max. #Guru #SustainableEngineering” – Inkling PL, a London-based Building Physics consultancy. @inklingllp

“Max Fordham is a Legend. Enough said. @CIBSE” @max_fordham was my 1st boss & was fab, so totally agree! (@MaxFordhamLLP” – Anne Dye, Head of Technical Research at RIBA. @annedyerresearch

Our research

We are engaged in ground-breaking research, which brings learning from extraordinary sustainability projects into practical implementation. Here are some examples.

Sahara Forest Project

The SFP is a unique combination of proven environmental technologies – solar thermal power, biomass production and the Seawater Greenhouse – which is predicted to create sustainable fresh water and food production and enable restorative growth even in the world’s most arid regions. The project’s first crop was realised in December 2012. A commercial-scale development planned for 2015.

The SFP, a joint venture between Exploration Architecture Ltd, Seawater Greenhouse Ltd, Bellona Foundation and Max Fordham Senior Partner Bill Watts, will develop a pilot system on 200,000sqm of land in Aqaba, Jordan, with in-depth studies taking place throughout 2011.

CHP

In the drive to reduce UK energy and carbon emissions local and central government are encouraging the use of district heating linked to combined heat and power [CHP] or waste incineration.

A team of Max Fordham engineers, led by Senior Partner Bill Watts, have researched and published a paper exposing the flaws in the case for CHP and arguing for a rethink on policy.

Post Occupancy Support

Max Fordham undertook a major research project to understand and manage the discrepancy between carbon emission predictions and actual energy usage of new buildings.

As part of a Knowledge Transfer Partnership with University College London, we carried out a two-year research project, evaluating the energy performance of 15 schools. The research gave us great insight into the realities of energy performance in buildings and showed just how much the management and use of a building impacts the performance.

From this we've developed an Energy Risk Management Strategy, which can be used through design development, handover and into the operational phase in order to deliver optimum performance. This can also be used to help support the Soft Landings; the BSRIA initiative.

Our publications

Not many practices can say 'we wrote the book on sustainability' – but we can.

Since our first publication in 1984 'Design with energy: The Conservation and Use of Energy in Buildings' (co-written with John Littler) we have been leading thinkers and influencers in how buildings can use less energy. Titles include:

- Sustainable Urban Design: An Environmental Approach
- Environmental Design: An Introduction for Architects and Engineers
- Photovoltaics and Architecture
- Photovoltaics in Buildings: A Design Guide
- British Council Sustainability Guide

The Sustainability Matrix

In 2010, we published a series of five matrices evaluating sustainability in The Architects' Journal, providing an easy reference tool to help clients and architects think about sustainability.

By laying out issues of design, construction and operation in one matrix it is possible to objectively discuss the complex and varied nature of sustainable building in a practical and manageable way. Thinking about the detail becomes more coherent and purposeful and you get a better building as a result.

The matrix helps to crack the issue of how to help clients understand what sustainability in building means – decode it if you like. It also encourages clients to bring engineers in early on in the design process, illuminating more possibilities for a project.

Our matrix is available at www.maxfordham.com/publications/sustainability_matrix. Here, architects are able to use it to help them to assess and communicate with their clients and demonstrate their commitment to ISO14001.

theenvironmentalhandbook.com

theenvironmentalhandbook.com is an online guide providing information and rules of thumb on environmental design for architects and architectural students. It was developed in 2010 between Fielden Clegg Bradley Studios, the University of Westminster and Max Fordham.

“just found this - theenvironmentalhandbook.com thank you @FCBStudios @MaxFordhamLLP @UniWestminster A very useful resource” – Tom Parsons, architecture student. @tomrparsons

Our teaching

Since the inception of the practice, teaching and learning have been paramount. The University of Bath recently conducted a reunion of prominent members of its architectural engineering course, and a presentation was made to Max Fordham (the Order of Bath) by Peter Clegg, in recognition of Max's work lecturing at the University.

Max Fordham engineers still work with a number of universities to share our knowledge, giving lectures and providing advice to students. We see it as a responsibility to share knowledge and promote the aims of good engineering and its intrinsic importance to architecture and design.

For example, our engineers have:

- lectured first year Engineering students at Edinburgh University;
- lectured architecture students at University of Greenwich
- attended an IMechE event for undergraduate engineers called 'Careers and Beers' which provided an informal opportunity to learn about the industry;
- tutored at the Edinburgh College of Art School of Architecture in Environmental Engineering;
- judged 'Speak out for Engineering', a competition designed to encourage young student and graduate engineers to communicate clearly to a non-technical audience;
- taught low energy house design at Edinburgh University Edinburgh;
- advised on the Cambridge University Engineering Department curriculum;
- lectured at UCL Bartlett School of Architecture, London Metropolitan University, RCA Architectural Department, Cambridge School of Architecture and the Birmingham School of Architecture;
- supervised final year architectural students dissertations at the Bartlett School of Architecture and at Kingston School of Architecture;
- actively participated in STEMNET (Science, Technology, Engineering, and Mathematics Network);
- Lectured to Harvard University Architectural School via video-conference;and,
- Lectured on design-led innovation at Design London, the joint venture between the Royal College of Art and Imperial College.

Our internal presentation series

In the past 18 months we have instituted the LUNCH MEET, a series of lunch-time presentations every Thursday in the London office that is video-conferenced to other offices. We have a wealth of knowledge in our 100-strong engineering team, which we aim to share across the practice. These sessions have been used to share engineering expertise, review projects, stimulate discussion about good design, share pitfalls and engage in debate.

This helps us to learn from others – to tackle problems together, learn from each other's work and provide an understanding and perspective our engineers might not have been exposed to before. Presentations are short and question driven, encouraging our engineers to think outside their project work.

Our memberships

Max Fordham engineers understand that our responsibilities extend beyond our practice and beyond the projects we work on. Our wider purview includes a desire to use our knowledge to help solve bigger challenges that confront us as a society. To this end, we are members of like-minded organisations that aim to serve the public debate around engineering, architecture and sustainability that will have such a bearing on the future of our built environment.

Our memberships include:

- CIBSE
- UK Green Building Council
- British Council for Offices (BCO), and in particular, their Environmental Sustainability Group;
- Association of British Theatre Technicians (ABTT); and
- BCSE (British Council for School Environments)
- The Engineering Club

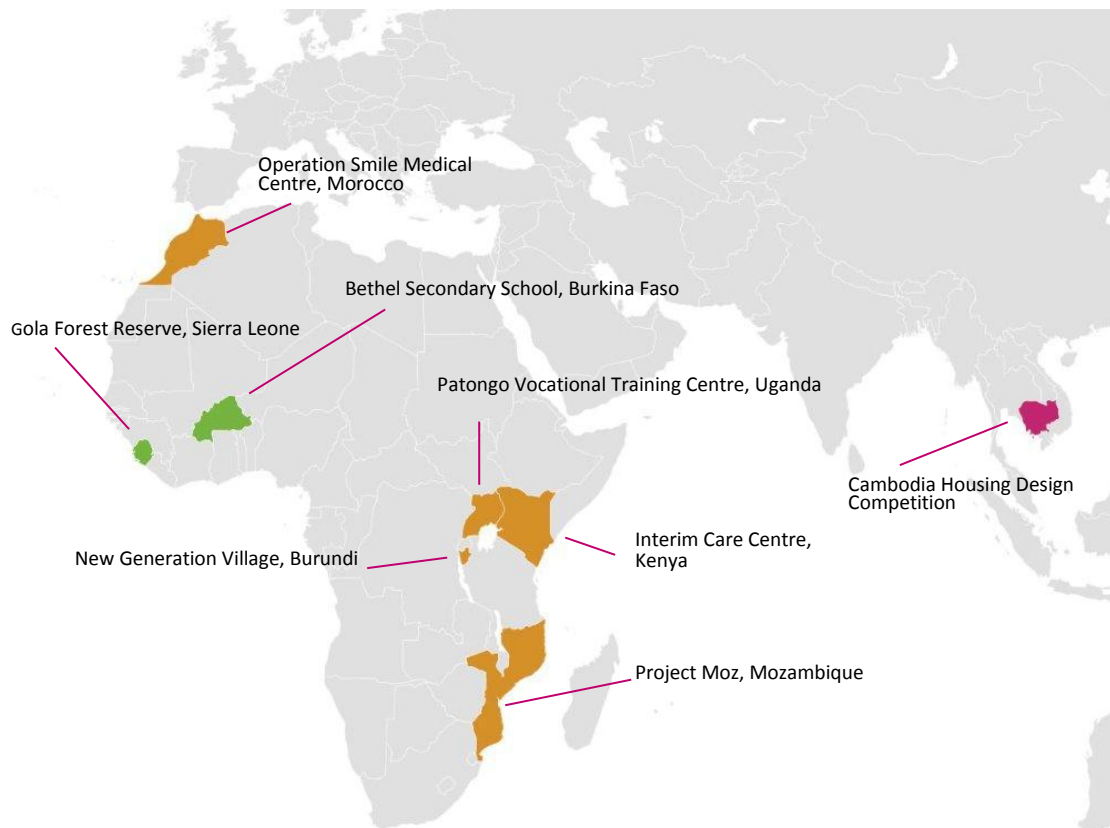
Our engineers are also encouraged to have independent memberships and take part in working groups and networks. We have 43 CIBSE members, including members on the Young Engineers group.

Our Developing Countries Group

Our obligation to be part of the discussion surrounding engineering and design at home is echoed in our commitment to infrastructure projects in the developing world. Our Developing Countries Group is made up of volunteers from within the Practice, who donate and dedicate time to finding engineering solutions for humanitarian projects across the world. The group encourages locals to learn about how to manage any infrastructure and to use locally sourced materials, so they can sustain themselves in the future.

The Practice supports them with a budget that pays for some of the engineers' time and also for trips to site where necessary. Our engineers also contribute much of their time for free.

The map below shows the location of Developing Countries Group projects, with current projects on-site shown in green, design-stage projects in orange and competitions in pink.



OUR AWARDS

We are very proud of the established track record we hold. Nearly 50 years of delivering building projects has translated into many success stories. This is never more apparent than when our work is recognised by the construction industry and beyond.

RIBA Stirling Prize
RIBA Awards
RICS Sustainability
BSCCE Industry Awards
CIBSE Low Carbon Performance Awards
Sustainability Awards
Europa Nostra Awards
Sustainable City Awards
Civic Trust Awards
Green Apple Awards for Sustainability
AIAUK Award for Refurbishment
CIBSE Employer of the Year Awards

OUR DETAILS

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We're keen to hear what you think. If you have any comments, questions or suggestions please email environment@maxfordham.com

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