

2015

The refurbishment of the Grade II listed National Theatre, London, UK, is complete

2015

Doha office opens

2015

Melbourne office opens

2009

UKGBC Sustainable Consultant of the Year Award

2010

Glasgow office opens

2008

San Francisco office opens

2008

Kroon Hall at Yale University, USA, achieves LEED Platinum

2002

CIBSE International Achievement Award

2002

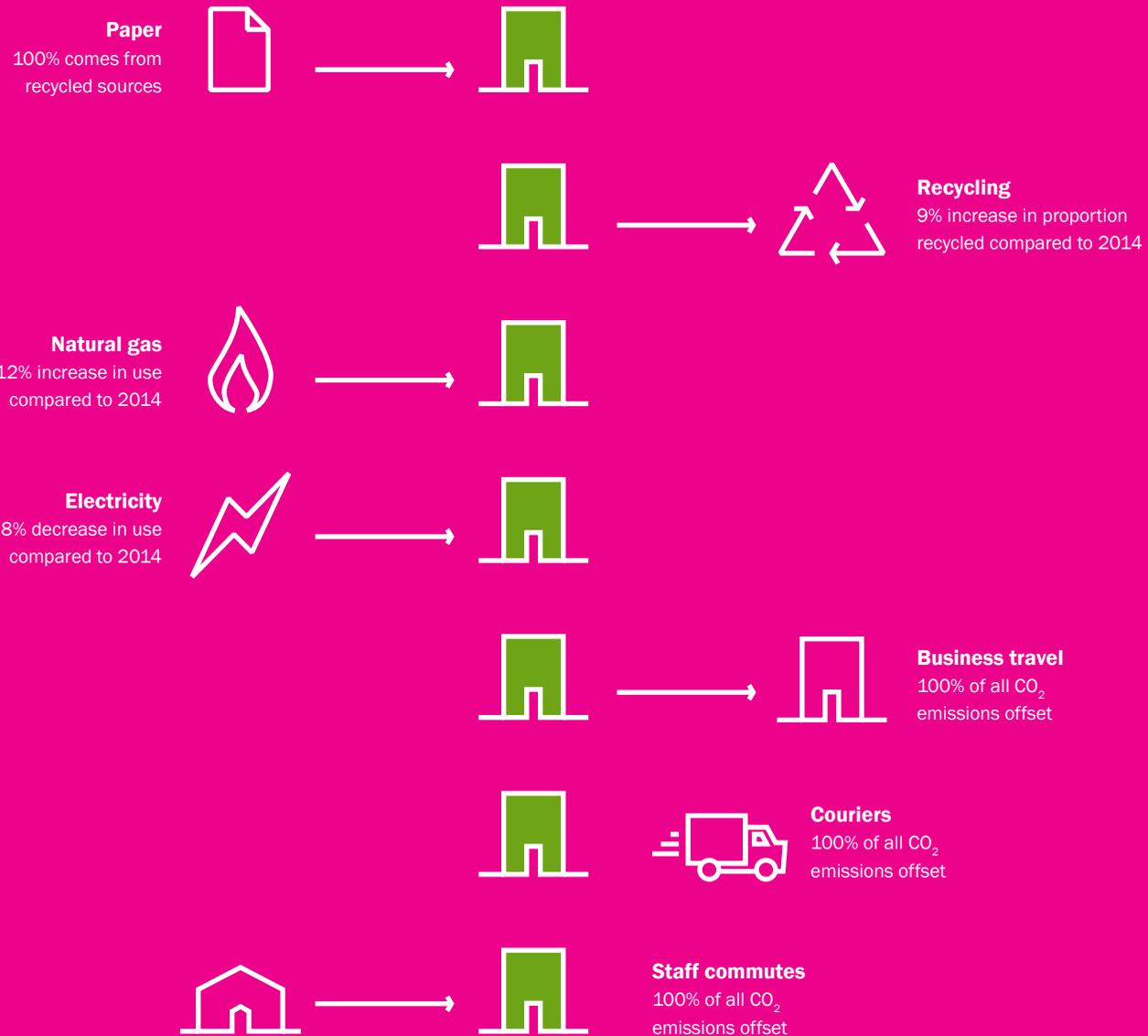
Federation Square, with the world's largest labyrinth, opens in Melbourne, Australia

2006

New Haven office opens

2015 Sustainability Report

2015 at a glance



Facts and figures about our employees



Introduction



Patrick Bellew
Principal

Welcome to our Sustainability Report.

2015 was always going to be a special year for Atelier Ten – the year we turned 25. A landmark in our journey from a small London-based studio to an international thought-leader with a portfolio that includes some of the world’s most celebrated high-performance buildings.

Together with a group of progressive engineers I founded Atelier Ten in 1990 with the aim of designing highly integrated buildings that would work to reduce energy consumption, improve the built environment and somehow contribute to health and wellbeing. I am pleased to say that the practice now has 11 offices around the world including the UK, USA, Australia and Asia, and is responsible for many industry-leading advances in green architecture.

Reflecting on 25 years, Atelier Ten has worked collaboratively with world-renowned architects including Robert A.M. Stern, Wilkinson Eyre, AHMM, Heatherwick Studio, Zaha Hadid Architects and Foster + Partners, and has been responsible for the innovative engineering of many world-famous, large scale projects, as well as effecting a step change in the sustainability of small scale buildings.

In line with our early ambitions, it is good to be able to say that the practice has successfully challenged and reshaped the way buildings and developments interact with the environment. Atelier Ten has led the way in responding to growing concerns about carbon emissions, energy efficiency and occupant wellbeing.

Exemplar projects include Gardens by the Bay in Singapore, completed to huge accolades in 2012 as one of the most intelligent environmental buildings in the world; Federation Square in Melbourne which incorporates the world’s largest thermal labyrinth for passive heating and cooling and which, after 10 years, continues to perform in excess of expectations; and the WWF Living Planet Centre, one of only 47 buildings in the world to achieve BREEAM Outstanding, the top rating of this leading assessment method for sustainable buildings.

Success is always hard won, but whether we’re working at a micro or macro scale, our mission is to improve the sustainability of the built environment while supporting the architectural aesthetic to make efficient, integrated and beautiful buildings.

And while the past has been all about making designs as sustainable as possible, the future is about focusing on how buildings really perform. Our approach has always been to challenge the established way of doing things. In the future, this means focusing on holistic models for buildings, looking at occupant wellbeing and understanding better how we all truly use buildings so we can operate them efficiently.

It is fair to say that huge strides have been made in the last 25 years but, as the drive towards ever healthier and less resource-intensive buildings grows, the next era promises to be even more interesting as we continue to strive to be at the leading edge of environmental design.

A responsible business

Sustainable principles strengthen our business.

As building services and fire engineers, lighting designers and environmental design consultants, we are committed to using our skills and influence to improve the built environment and to maintain the integrity and quality of the natural and cultural environments in which we operate.

As such, we aim to apply the principle of sustainable development, meeting the needs of the present without compromising future generations. Our environmental mantra is:

“...doing more with less.”

At Atelier Ten, we integrate environmental best practice into our business activities while maintaining an appropriate balance between environmental and economic considerations.

Accordingly, our policy is to:

- apply responsible standards in areas not already covered by existing laws and regulations
- respect the environment and emphasise every employee’s responsibility to improve environmental performance
- integrate environmental considerations into all of our activities including considering the environmental impact of products and services in our purchasing decisions
- minimise our use of resources and wastage of materials as far as economically and practicably possible, undertaking appropriate reviews to measure progress
- save energy through the monitoring of unnecessary use of energy sources and ensuring equipment is kept switched off

- when not needed
- share experiences with others to foster wider improvements within the community and communicate with our clients, collaborators and suppliers on environmental matters.

Delivering excellence

Quality is a key driver for Atelier Ten and forms a fundamental part of our company ethos and mission. We have exacting quantitative and qualitative standards: these standards underpin everything that we do and form the basis of our quality assurance systems. Atelier Ten UK is an ISO certified company and currently operates an integrated quality and environmental management system that meets the requirements of ISO 9001:2008 and ISO 14001:2004. We are currently in the process of transitioning to ISO 9001:2015 and ISO 14001:2015.

Minimising our carbon footprint

We are a carbon neutral company committed to reducing our overall carbon footprint. We seek to reduce our carbon emissions and offset those that are unavoidable. Within our business operations, key focus areas for us include energy management and working with suppliers to improve their environmental performance, purchasing products with reduced environmental impacts and minimising transport-related emissions.

Our office management system ensures that all unnecessary lighting, heating, cooling and business machines are turned off or have built-in energy saving modes enabled. Our waste management policy observes the hierarchy of ‘reduce, reuse, recycle and recover’. We also collect and recycle

Use less

Reduce our energy consumption through efficiency measures, sustainable procurement and staff behaviour change

Buy well

Source best providers and technologies

Renewable energy

Source energy through more sustainable opportunities including heat recovery

Offset

Compensate for emissions from the residual energy we use, by investing in social and environmental projects that also benefit communities

Our energy management hierarchy

where appropriate, across the business, along with recognised best practices.

Diversity and inclusion

Our ability to deliver our business strategy while addressing environmental and social challenges depends on the quality and diversity of our people. We promote and support a diverse workforce at all levels. It is our belief that creating a work environment that enables us to attract, retain and fully engage diverse talents leads to enhanced innovation and creativity in our designs and services. We believe being immersed in different cultures and ways of working helps us to challenge conventional thinking.

We are an equal opportunity employer and base employment decisions on merit, experience and potential, without regard to race, colour, gender, sexual orientation, religion or age. We are committed to maintaining a work environment free from discrimination and harassment. Our challenge is to continue to build diversity across our business.

We believe that:

- diversity is clearly much broader than gender. It incorporates diversity of race, thought, experience, skills, understanding, perspective and age
- successful companies sell to clients regardless of gender, race, ethnic group or religion and a diverse workforce should reflect its clients. A diverse management is more in touch with concerns of its clients and staff, providing different perspectives in devising successful business strategies.

Acting with integrity

We expect everyone at Atelier Ten, wherever they work, to meet high ethical standards, and we want to do business with clients, collaborators and suppliers we can trust and who share our values. Our extensive framework of policies and systems to manage our responsibilities is well established and continues to evolve as we encounter new issues.

printer and toner cartridges, batteries, waste electrical equipment and old mobile phones which are managed through our supported charities. To lessen the environmental impacts of our own purchasing policy for office supplies and materials, we have embedded environmental principles into our formal relationships with suppliers.

- Sustainable Procurement Policy
- Ethical Policy
- Health and Safety Policy
- Recruitment Policy
- Training Policy
- Aspects and Impacts Register
- Waste Management Schedule
- Register of Legislative and regulatory requirements

Our International Strategic Board leads our efforts to integrate sustainable thinking into our long-term strategic planning and daily activities. With members drawn from the UK, US and Australia, the board drives our sustainability priorities and is accountable for developing goals and reporting progress.

Health and safety

The health, safety and wellbeing of our people is critical to us delivering our strategic objectives and is a major constituent of our quality and environmental management system.

All accidents in the office and on site are reported and details recorded as they occur, and all serious cases are fully investigated. First-aid cases and near misses are also reported. The learning from all incidents is shared,

Governance

By defining our social, environmental, ethical and economic responsibilities and opportunities, we can be judged on how we perform. This ensures we deliver on our commitments in a manner consistent with our values. We are committed to maintaining high standards of corporate governance and believe that effective practices are essential to business integrity, performance and accountability.

The business is governed by a corporate responsibility framework that comprises a series of policies, control arrangements and reporting. This includes the following:

- Corporate Social Responsibility Policy
- Environmental Policy
- Sustainability Policy

Atelier Ten's office at Perseverance Works, London



Assessing risk

It is our aim to manage risk so that we can successfully deliver our objectives, creating value while promoting the interests of our many stakeholders through the safeguarding of our assets and reputation. We have in place company-wide risk management processes for the identification, evaluation, response and subsequent monitoring of risks that may significantly threaten the delivery of our projects, revenue, profits, assets, reputation and long-term strategic aims. At a project level, we adopt rigorous assessment processes regardless of location.

Boundaries

This report covers the full year to 31st December 2015 and builds upon our Sustainability Report issued last year. The information contained within this report relates to our offices in the UK (and US where data protection allows us to share information). In line with UK-GBC recommendations, our reporting is prepared in accordance with the Global Reporting Initiative (GRI) G4 Sustainability Reporting Guidelines. The principles within GRI provide guidance to determine report content and quality in terms of materiality, stakeholder inclusiveness, sustainability context, balance,

comparability, accuracy, timeliness, clarity and reliability. This report is self-declared GRI level C.

We value your feedback

We welcome any questions, comments or suggestions that you might have about this Sustainability Report and our performance. Please send your feedback to Kate Carpenter at kate.carpenter@atelierten.com

The principle of materiality is essential in understanding sustainability priorities; it is used in decision making to define whether an aspect or issue is sufficiently important to warrant attention. For us, it's not just about getting better at what we do, it's about striving for the best, creating value for Atelier Ten and our clients, and innovating for a better world.

The importance of materiality

At Atelier Ten we take an holistic approach to sustainability, reflected in our matrix of material issues. It's a snapshot of significant drivers for the business and its stakeholders over the long term.

We have identified these issues through dialogue with our client and collaborators – and with many other external stakeholders and industry bodies – in the course of our business. The matrix below also reflects conversations that happen every day across the business, from boardroom to coffee shop.

It's this combined insight that has helped us understand where to direct our effort and resources. But one thing is certain: nothing stands still. As our markets and operating environments evolve, we are tracking global trends and making sure we address those environmental, economic and social issues with the greatest impact on our business.

As shown in the matrix, there are a wide range of sustainability issues on our radar, and every one of them matters. Although they're not all under our direct control, we can make a positive contribution to addressing the challenges while making the most of the opportunities.



We talk to interested parties and stakeholders alike:

- as part of our normal, day-to-day business
- in connection with specific sustainability issues
- in connection with changes in our operations
- in the development of our sustainability reporting

Employees

- Increased diversity
- Fresh perspectives
- New approaches
- Increased range of languages spoken / written
- Increased cultural sensitivity
- New clients / projects

Management

- Efficient work streams
- Increased profitability
- Increased client satisfaction
- Use of third-party logos as a mark of quality

Suppliers

- Challenge our thinking
- Insight on future needs and technical support
- Use of third-party logos as a mark of quality

Existing clients

- Insight on future needs and technical support
- Repeat business
- Use of third-party logos as a mark of quality

Prospective clients

- Insight on future needs and technical support
- New clients / projects
- Use of third-party logos as a mark of quality

Shareholders

- Exploit global opportunities
- Protection against regional cyclical downturns

End-user

- Insight on future needs and technical support
- Repeat business

Statutory and regulatory bodies

- As early adopters, lead market and build knowledge profile
- Anticipate future change and create business / new service opportunity
- New clients / projects
- Use of third-party logos as a mark of quality

Government

- Use of third-party logos as a mark of quality

Wider public

- Use of third-party logos as a mark of quality

The stakeholders and interested parties we consult with, and the resulting opportunities for Atelier Ten

Interested parties

We are committed to engaging with all of our interested parties and stakeholders, both internally and externally, to become the most sustainable, responsible company we can.

Moreover, our priorities are informed by our stakeholders: by listening to, partnering with and considering the perspectives of our employees, clients, collaborators, affiliated organisations, academic leaders, government, and even our competitors, we can deliver sustainable solutions that add value and help to make a significant difference.

We have robust policies and systems in place to manage the wide range of sustainability issues we encounter in our business activities. Listening to our stakeholders helps us prioritise these issues by identifying those that are most important to them and to us. We want to understand the views of our

stakeholders – people who can affect our business or who are affected by it. By understanding, we can account for any differences and communicate our perspectives.

Indeed, this report is a key part of our continuing communication with stakeholders on our approach to and management of sustainability issues and risks for long-term profitability. While we seek an open and transparent dialogue with stakeholders, we also maintain a focus on material issues where we can make a real difference. This focus is an integral part of the culture at Atelier Ten and reflected in the content of this report.

We have developed a stakeholder map that identifies both our internal and external stakeholders. Our engagement with each stakeholder group differs and, in an effort to adapt to changing needs and issues, continues to evolve. As we pursue our corporate sustainability goals, we intend to further strengthen these relationships. Together, we are establishing transparency and enhancing our relevance with the clients, collaborators and communities we serve.

Highlights and challenges

Short stories from our offices around the world.

Green successes

We conducted a “green” survey in our London office in early 2015. The results have helped us to understand the issues of greatest concern to our staff, which in turn helped us to shape our priorities for the year. The survey was also an opportunity to capture ideas and suggestions, many of which have been implemented:

- notebooks produced from scrap paper
- replacement LED bulbs fitted in fridges
- twice weekly yoga classes made available
- filtered potable water dispenser installed
- bicycle doctor arranged in Perseverance Works
- “Cycling in London” confidence-building classes arranged for those who requested
- “task lighting” survey completed with task lighting made available to those who requested
- “greening the office” survey completed with indoor plants bought and distributed
- organic fruit prioritised in our weekly fruit deliveries.

Targeted for 2016

In order to continue our efforts to green our office, we will:

- distribute a follow-up survey
- introduce an anti-plastic bag strategy.

A more flexible way of working

Atelier Ten is committed to the promotion of a healthy work-life balance and developing work practices and HR policies that support this ambition. In 2015 we introduced “flexible working” arrangements and improved the rules around occasional home-working. This provides staff with more choice, subject to business requirements, over their working hours providing increased flexibility to meet family needs, personal obligations, and “occasional” life events and an ability to avoid traffic and the stresses of commuting during rush hours.

WELL AP

Younha Rhee, a Principal Environmental Designer in our London office, is one of the first WELL Accredited Professionals (WELL AP) in the UK. The qualification signifies extensive knowledge of human health and wellness in the built environment, and the WELL Building Standard. The WELL Building Standard is an evidence-based system for measuring, certifying and monitoring the performance of building features that impact health and wellbeing.

WELL is grounded in a body of medical research that explores the connection between the buildings where we



Green successes: yoga classes



Green successes: the bike doctor will see you now



Turning 25: our birthday party at the Avenue, in London



Women in engineering: Shonah Macdonald



Charity cycle: Atelier Ten Scotland's racing team

spend more than 90% of our time, and the health and wellness impacts on us as occupants. WELL Certified spaces can help create a built environment that improves the nutrition, fitness, mood, sleep patterns and performance of its occupants.

Turning 25

As part of our 25th Anniversary celebrations we published a book titled "Invisible Architecture" that charts our journey from a small practice in London to a global thought leader. Published by Laurence King, the book is a collection of themed essays and photographic studies that describe the work of Atelier Ten and how the practice has evolved and developed a particular approach to sustainable design.

Introducing healthy design

Working to secure funding for the new BRE Headquarters in Glasgow, we examined a number of new emerging technologies in order to achieve a zero carbon solution without financial penalty. For the Ofgem fit out in Glasgow in 2015, we introduced circadian lighting –one of the first of its kind in Scotland. A colour warmth changing installation designed to match the body clock and promote health and wellbeing. This was introduced in a lower ground floor where daylight was particularly poor.

For new speculative commercial developments in Glasgow, we have introduced adiabatic air handling units. Among the first in Scotland, these are cheaper than traditional units and have no central cooling coil. As such, the internal environment is more pleasant, with better levels of relative

humidity. The consequence is fewer dry throats and contact lens issues – hopefully resulting in lower absenteeism.

Women in engineering

Shonah MacDonald of our Glasgow office was invited by Glasgow Caledonian University to take part in a film that encourages women to become engineers, as well as helping to change the stereotyping that surrounds women in engineering.

The film will be available on the university website's fire engineering page and on the women in engineering page. In the film she talked about her time at university, how she found the experience and what she would recommend about the fire engineering course. She also spoke about why she enjoyed being a graduate engineer at Atelier Ten, what she has learned since starting with us and the breadth of opportunities provided.

She also presented her views on women in engineering and why she thinks women should not be discouraged from becoming engineers. She may also be featured in the 2016 university prospectus to help encourage female students to apply to engineering courses.

Building knowledge

We held an international knowledge workshop on data visualisation in London in March 2015, the first in a series of workshops designed to bring together knowledge bearers from our international offices to share ideas across disciplines. With participants drawn from London,

Glasgow, New York, San Francisco and Bangkok, the focus was on using recent theories on visualisation to shape our understanding of the data sets we try to visualise and what tools or software we might use to effect this in the future and how to establish common templates for knowledge sharing internationally.

Charity cycle

The Atelier Ten Scotland team cycled from their Glasgow office to the Edinburgh office, over 50 miles, to raise money for the new Prince and Princess of Wales Hospice, Glasgow. We are delighted to announce that the team raised over £5,000 for the hospice.

Working within the community: Engineering Club

Since 2014 Atelier Ten has run an after school Engineering Club at the City of London Academy, Islington (CLA). The club was conceived as a way to engage young students with engineering: finding fun ways to teach basic engineering principles with the hope of encouraging the uptake in STEM subjects and even engineering at university. The enthusiasm of the teaching staff at the CLA inspired and encouraged us to harness the wealth of knowledge of Atelier Ten's engineers to create and deliver exciting and interesting projects for all age groups.

It's not rocket science?

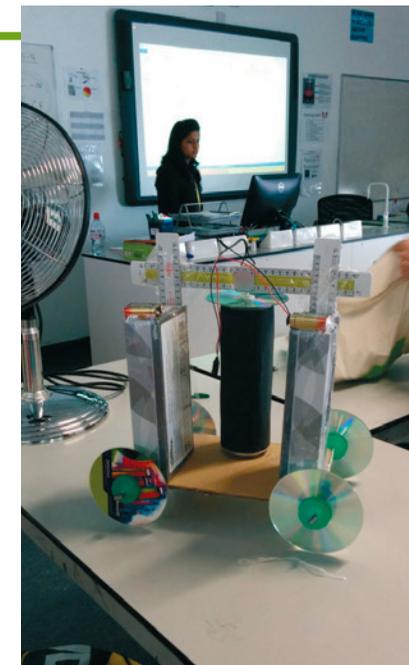
The students were tasked with building a water-powered rocket out of fizzy drinks bottles and a few other household items. To make the task more challenging we also asked them to attach and protect an egg during flight. We started with a few simple aeronautical and Newtonian principles that

would help the students in the design session, followed by two weeks of building. While most of the designs evolved into the typical conical rocket shape, the position of stabilising fins and the egg protection systems varied massively. The final week saw the teams pitted head-to-head to test their designs: the flight and spray of the rockets attracted a lot of attention around the school! All of the rockets performed well, although a clear winner emerged. The champion rocket not only travelled the furthest distance but was the only rocket to successfully protect the egg.

The Magnus effect car

When a round object like a ball or tube spins fast, a small layer of air clings to the rotating surface. If the object is moving, or if it is windy, this means the air on one side is moving faster than the air on the other. The difference in speed leads to unequal pressures, which pushes the object sideways. Known as the Magnus effect, we challenged the students to build cars driven by air currents. The kids enjoyed watching the videos we presented about the Magnus effect on a spinning basketball. They also liked the process of designing the car and selecting the appropriate materials to build it, while taking into consideration the effect of wind direction from a fan. We enjoyed the success of the first built prototype and the enthusiasm of the students while learning a new idea and testing how it works. Our lesson: to keep things simple!

We have had a great success with the Engineering Club this year and we hope to continue our collaborations with the CLA next year, training the next generation of engineers and perhaps future Atelier Ten employees.



Engineering Club: Magnus effect car



Engineering Club: proud participants

Archikids Festival: inspiring the next generation of designers

In spring 2015, members of our PTEN (professional training and education network) group entered the Structure Rocks competition to create an innovative engineering-focussed activity to run during Archikids Festival 2015. The Archikids Festival, an Open-City family weekend festival of 30+ free architectural activities located in the City of London's Square Mile, aimed to inspire the next generation of designers.

Impressed with the ambitious proposals to build a 3D model of London's Square Mile integrated with LEDs for kids to light up using interactive mini-renewable power generating systems, our activity was selected by the jury and we were granted £500 to realise the plans.

Through dedication and imagination our team produced a professional model of the city wired to mini solar panels, a hydro turbine and a wind turbine. During the festival in July, excitable kids pumped water over the turbine paddles, moved solar panels out of the buildings' shadows and drew, cut and stuck together their own wind turbine blades. Through their efforts, and despite the bright day-lit dome that drowned the full impact of the LEDs, families witnessed the city lighting up through renewable energy sources.

While some children just enjoyed splashing water and cutting shapes, others asked our volunteers questions and learned about renewable energy systems inspired by the activity. Parents appreciated the educational aspect of the activity and the immediate response of the LEDs. The weekend was great fun and we hope we have inspired some of the next generation of sustainability engineers.

Carbon neutrality

Like the rest of Atelier Ten, our US offices are committed to providing a comfortable, pleasant working environment for its staff and is likewise committed to being as carbon-neutral as possible in terms of its facilities, operations, purchasing and policies. In 2015, we continued to look for operational ways to improve on this commitment by shifting employee payroll and benefit records from paper to electronic format. We again collaborated with Natural Capital Partners (formerly The CarbonNeutral Company) for carbon footprint measurements and offset programme delivery. As always, our dedication to carbon neutrality results in an active participation from all staff. Wherever possible, we reduce resource consumption, reuse, recycle or compost, take mass transportation or share transportation and practice sustainability in our daily routine. Each of the US offices have policies, procedures, and structures in place to enable this practice to become routine.

AIA 2030 Commitment

Atelier Ten US is dedicated to a carbon-neutral built environment and has joined the American Institute of Architect's 2030 Commitment, which tracks the performance



Water turbines at Archikids Festival

of signatory architecture firms against Architecture 2030's established benchmarks in the 2030 Challenge. The 2030 Challenge consists of increasing carbon reduction goals to achieve a carbon-neutral built environment by the year 2030.

As a 2015 signatory, we were one of 140 firms who successfully tracked and submitted data for our 2014 projects. Energy simulation is the key to meeting the 2030 Challenge. 70% of our projects show at least a 20% reduction in energy use intensity (EUI), and 40% of our projects show a 50% reduction in EUI over the US national average.

Climate Bonds Standard

Atelier Ten is now an approved verifier organisation for the Climate Bonds Standard, a tool for investors and governments to ensure projects pursuing funding through the growing climate bonds market achieve their carbon performance targets. Atelier Ten can provide third-party verification for the Low Carbon Building Standard. This allows Atelier Ten to help developers and investors from the earliest stage of a project determine their eligibility for Climate Bonds Standard certification.

Certified Measurement & Verification Professional

In 2014, we introduced measurement and verification (M&V) to our clients throughout the US. Our M&V experience and opportunities continue to grow in 2015 with exciting new projects, including the Cooper Hewitt Smithsonian Design Museum and Columbia University Manhattanville.



Daylight observation around Atelier Ten's global offices

Our portfolio is further enhanced with the addition of a Certified Measurement & Verification Professional (CMVP). Chris Carper, Senior Environmental Designer in New York, completed his CMVP certification exam, demonstrating his proficiency with measurement and verification, as well as knowledge of the International Performance Measurement and Verification Protocol. CMVP is an accreditation from the Efficiency Valuation Organisation and the Association of Energy Engineers awarded to qualified professionals in the growing field of M&V within the energy industry.

LEED Fellows

Emilie Hagen, Associate Director of our San Francisco office, has been appointed to the 2015 class of LEED Fellows, one of the highest distinctions in sustainability, by the Green Business Certification Inc. (GBCI). This year's 35 Fellows were honoured for their outstanding work as LEED Professionals and for the significance of their contributions to the green building community at large. The LEED Fellow recognises the most exceptional professionals and it is the most prestigious designation awarded from GBCI. She joins LEED Fellows Nico Kienzl, Director of New York (Class of 2012), Paul Stoller, Director of Sydney (Class of 2013), Mark Loeffler, Director of New Haven (class of 2014), and Claire Maxfield, Director of San Francisco (class of 2014) and makes Atelier Ten the only firm with five LEED Fellows on staff.

Policy development and advocacy

Nico Kienzl, Director of the New York office, joined the "One City: Built to Last" Technical Working Group assembled by

New York City Mayor, Bill de Blasio, to address city building emissions. Buildings in New York City are responsible for 74% of the city's greenhouse gas emissions and "One City: Built to Last" is a 10-year plan to green public and private buildings and reduce building-based emissions by 30% by 2025. This 10-year plan makes New York City the largest city to commit to the 80% reduction by 2050.

As part of this 40-member panel of leading industry experts, Nico's particular expertise in energy and building performance is vital in assisting the working group, the Mayor, and the City over the next few years to solidify programs, incentives, and mandates to retrofit existing buildings to become more energy efficient.

Daylight observation

An annual participation across all US offices, we have once again joined hundreds of organisations in the Building Energy Exchange's Daylight Hour event by turning off the lights in our office spaces from noon to 1:00 pm on the longest day of the year. 2015 was more exciting with the participation of our offices across the globe including London, Glasgow, Doha, Bangkok, Singapore, and Sydney. Our active participation earned us the Globetrotters and Outstanding Alumni awards. Staff from the New York office had some fun with light meters to explore how much daylight was available at each desk.



Our in-house sketch club: over a series of sessions, members of our graphics and environmental teams shared tips and tricks on drawing with the rest of the engineers

Workplace management

We're all about developing people to excel at what they do, challenging how things are done and inspiring change.

As environmental design consultants we are committed to using our skills and influence to improve the built environment and to maintain the integrity and quality of the natural and cultural environments in which we operate. As such, we aim to apply the principle of sustainable development in all that we do.

Our vision

Our vision "shaping a more sustainable world" is ambitious and long term. Within that, we have an important duty to ensure good environmental performance in all our business operations and to provide the necessary organisation, commitment and training to fulfil this obligation. As a professional services company our environmental impact is small compared with many other industries. But our clients, our staff and other stakeholders still expect us to minimise that impact, and as a responsible business whose operations ultimately rely on natural resources, we want to do everything we can.

And significantly, we build on our own culture of innovation and seek to facilitate client behaviour change towards a more sustainable mindset. We know that there's much to do but we are driven by our clear vision for a more sustainable world.

Our approach

For this reason, in 2012 we adopted an integrated management philosophy that combines ISO 9001 (Quality Management Standard) with ISO 14001 (Environmental Management System). This approach ensures that all staff are committed to delivering the highest levels of satisfaction and environmental management to clients, collaborators and each other with the greatest of integrity and ethical diligence. Moreover, it ensures that we apply adequate quality standards across our business operations and project activities, and that we gather objective evidence to demonstrate that we have met these standards.

Our operational impact comes mostly from carbon emissions generated by business travel and by energy in our buildings. So, carbon mitigation is central to our efforts, and we've offset our operational carbon emissions, as reported each year, since 2008. We also work to reduce the waste we generate and the resources that we consume, such as paper and water.

At an office level, this is achieved by incorporating environmental responsibility into all business operations through a series of policies, procedures and management systems that assess and monitor, on a continuous basis, the environmental impact of our operations. Many of these are recorded in the report. At a project level, we work with clients, contractors, professional bodies and the community at large to raise

the environmental standards of the industries in which we operate. To deliver this, we aim to be a leader in sustainable development in areas relevant to our business and to promote sustainable practices.

A culture of innovation

Every day at Atelier Ten we work together to create smart solutions to all manner of design challenges within the built and planned environment. Building an inclusive culture of innovation begins in our offices and continues through our learning and community programmes. We want to become an employer of choice by "up-skilling" employees, driving a culture of performance and having a client-focused agenda. By encouraging people from different backgrounds to join our workforce, we can become more responsive to future challenges and opportunities.

Being an innovation leader means applying the right skills to do an outstanding job. By bringing out people's true potential, we are better able to serve our customers, improve employee retention and become a more attractive employer. We believe that a variety of perspectives, backgrounds and experience will help us build a more innovative and responsive business.

Putting customers first

Ensuring our clients and collaborators come first is fundamental to our growth strategy. New business wins, customer retention and industry awards are testament to our innovation and seamless service.

Consequences

In meeting these objectives, we provide value to our clients by building upon our reputation for integrated design and a holistic approach to projects recognised for their sustainability credentials. It also helps us achieve performance that ensures our economic, environmental and financial viability and employ and retain staff who have a high degree of awareness and expertise in sustainability.

Valuing our impact

We're also shaping the debate on important environmental issues and collaborating with our clients on their environmental impacts.

Strategic plan

While our Environmental Management System was certified in 2014, we strengthened the importance of sustainability within our Strategic Plan in 2010 with a stated ambition to secure ISO 14001. It was a way for us to acknowledge that economic, environmental and social responsibility are interconnected. Sustainability is the basic principle that governs our business operations. As such, it forced us to regard our business targets and corporate interests in relation to our stakeholders' expectations, opportunities and thus prioritise our actions.

Our Strategic Plan is not static: in a dynamic and competitive environment we must continuously adapt to new market conditions. Similarly, the demands expressed within our stakeholder dialogue framework change from year to year. The annual review and resetting of our

Strategic Plan also provides an opportunity for us to undertake a comprehensive materiality review to check that the issues we have identified as material remain valid and what changes (if any) are required to focus on what matters in our future reporting.

Governance and sustainability management

We keep a close eye on the risks our business faces. We define risk as any event that could influence the achievement of our objectives – for better (opportunities) or worse (threats). For example, we need to ensure that our facilities meet the requirements of current environmental legislation. Each time we open a new office, wherever it is in the world, we review the systems, principles and processes by which the company is governed to ensure they are relevant and appropriate. In this way, we ensure the guidelines



Atelier Ten Foundation: since 2008, we have reinvested a portion of our profits each year in support of employee initiatives that allow them to employ their skills in the wider world.

Responsible procurement

We want to bring others with us on the journey towards a more sustainable world: our corporate responsibility extends far beyond our own operations. We only want to work with suppliers that meet our social and environmental standards, as laid out in our procurement policy. Wherever possible, we do business with small local suppliers. And where necessary, we work collaboratively with them to develop action plans to improve their environmental, social and business performance.

Our approach to waste management

With respect to waste management, we recognise that many of our waste streams have the potential to be recycled for economic benefit. This reduces the amount of virgin material that needs to be mined or extracted from the natural environment. Thus for the collection and transfer of inert and non-hazardous waste, we ensure all appropriate licences and environmental permits are valid and that we are in receipt of waste transfer notices. This ensures we know how our waste is managed and treated. Additionally for hazardous waste, we check the validity of a proposed carrier's registration, the validity of the proposed disposal facilities' licences and secure consignment notes if necessary. We also ensure that our electrical and electronic equipment is managed under the Waste Electrical and Electronic Equipment Regulations.

Waste and recycling

Our waste management policy observes the hierarchy of 'reduce, reuse, recycle and recover'. As for any office, our key waste streams are office consumables and electronic waste. We reduce the amount of waste we send to landfill by encouraging local arrangements for computer and furniture re-use, and establishing recycling contracts for electronic waste and standard office consumables. Waste is collected from recycling points within the office and processed centrally by third-party provider Paper Round.

As part of BPR Group, Paper Round, which started life in 1988 as a small Friends of the Earth project, is London's leading recycling service provider with more than 20 years' experience of managing waste and recycling for companies of all sizes and currently services over 5,500 sites. Dry recyclables are separated mechanically and by hand; non recyclables are incinerated to ensure locked-in energy is reused. BPR Group is an ISO 14001 accredited company.

In addition, we have centralised collection points for toner cartridges, toner, batteries and light bulbs. Toner cartridges are recycled on behalf of a charity (VICTA), while waste toner



The Foundation has supported projects locally and around the world in integrating sustainable strategies into buildings. After they return, employees share their experience with the rest of Atelier Ten.

for allocating roles and responsibilities among directors and other stakeholders are always fair, transparent and deliver accountability.

Green committee

We are aware of the environmental impact associated with our business activities and the strategic importance of implementing green management practices. This understanding led to the establishment of the Green Committee. With members drawn from across the business, it meets quarterly to confirm green management policies, assess performance and make decisions on the establishment of improvement measures detailed within our Aspects and Impacts Register.

Print partner: Calverts Co-operative

Calverts is a common ownership design and print co-operative, where the members have control over working processes and conditions. Their environmental policy has evolved over 30 years, as an outcome of their ethos as a socially responsible business, and in support of their clients' own corporate social responsibility and environmental policies.

They strategically invest to meet their ISO 14001 environmental targets. Calverts has invested in computer-to-plate technology, which dispenses with film entirely. In 2009 they installed a processless plate system dispensing with the need for developer. Calverts runs Heidelberg litho and Konica Minolta digital printing presses. Every investment in new technology is guided by its potential for reducing waste and improving environmental performance.

They have reduced their output of volatile organic compounds by converting to vegetable oil (rather than mineral oil) based inks. Waste ink is removed and transported by licensed carriers where it is broken down to a non-hazardous liquid by bio-digestion. Licensed carriers remove used ink tins and plates. Some are used as fuel and others crushed, melted down and reused as pure aluminium. All plastic containers are removed by licensed carriers where they are shredded, bulked in 20 tonne loads and passed onto the building industries for use in the production of plastic products such as drainpipes. As Calverts operates in a semi-residential neighbourhood, they have made noise reduction a prerequisite in the siting, purchase and installation of replacement equipment.

Calverts has a renewable energy contract where 100% of their electricity use is generated from hydroelectric and wind-power. When replacing equipment they seek to purchase items that are energy efficient and will donate redundant equipment to charities or organisations that reuse or recycle. They are FSC certified, and founder members of the SEE (Social, Environmental and Ethical Transparency) programme.

bottles are disposed of in contaminated waste bins that are in turn collected by Paper Round. Batteries are recycled through our stationary supplier, Office Team. Light bulbs including fluorescent tubes are collected and held centrally by the Office Manager and when volumes are large enough these are disposed of using Paper Round. Production, storage and disposal of WEEE such as PCs and monitors is via Perseverance Works' centralised collection facility. This is then collected by Paper Round who recycle where possible to local charities.

Managing our energy consumption

The energy we use in our buildings is a major contributor to our overall carbon footprint, making it a priority in our environmental agenda. Our approach to energy management is designed to reduce our impact on the natural environment, ensure our staff have a comfortable and safe working environment and to manage our business running costs.

We manage energy consumption in our offices whenever possible in order to:

- reduce the use of fossil fuels and therefore preserve energy resources for future generations
- reduce carbon emissions in order to protect the environment from pollution caused by our work.

Our electricity consumption has decreased by 16% year-on-year, normalised per member of staff. Some of this reduction has been from 'low hanging fruit', so we expect progress to be more challenging and incremental as we continue to invest in improvements. We've achieved this by investing in new technologies and changing the way we work. Normalised consumption of gas has increased by 2% compared to 2014.

Opportunities and risk

Reducing the amount of energy we use not only helps us to reduce our operational exposure to energy security risks, and it also helps us to reduce costs. Planned refurbishment of our

Carbon offsetting projects

Small hydroelectric project in central Brazil

The Braço Norte III Plant (UNFCCC 667) is a small, clean, renewable energy hydro plant located in a remote region in central Brazil. Unlike large-scale hydro projects, it has almost no environmental impact.

The region's main economic activities centre on agriculture (soya and rice), forestry and cattle, and it is one of the fastest growing areas in Brazil. The traditional response to meet any increase in energy demand is to increase supply from gas-fired power plants. This hydroelectric project has supplanted the fossil fuels that would have been burnt and the carbon dioxide that would have been released into the atmosphere. In addition, the project avoids the transmission losses that would have resulted as a consequence of the distances required to connect to the National Grid. It also provides increased stability thanks to locally distributed generation.

Rice husk co-generation in northern India

The Siddeshwari Project (UNFCCC 235) is a small-scale biomass co-generation initiative in a paper mill in the Uttar Pradesh region of northern India. It uses local rice husks (which would have been left to rot producing methane) to produce electricity and steam to power the mill. This replaces the use of three old diesel generators and a coal-fired boiler, saving 17,814 tonnes of CO₂ emissions every year since inception in 2003.

Without carbon funding through the United Nations, this project would not have been possible. Upfront capital costs and rising biomass prices, due to a weak distribution infrastructure, made it financially nonviable. However, in a region where 81% of power is generated from coal and electricity capacity is forecast to lag demand by almost 15%, the benefits are clear.

Landfill project in Tanzania

The landfill gas recovery project (UNFCCC 908) was established to help the residents around a waste landfill site in Dar Es Salaam in Tanzania. As a consequence of soil erosion, and following a request by locals to reclaim land using solid waste materials, the City Council agreed to operate a solid waste landfill site between 2001 and 2007 and in 2004 started planning for its closure by looking into leachate management and landfill gas capture. The latter was approved as a CDM project in 2007 and gas flaring began in 2008.

In addition to providing jobs, health benefits, skills transfer and electricity for local residents, the project has improved the local environment as the dumpsite area was covered with clay soil followed by the planting of grasses and trees. It also raised much needed revenues for the council allowing them to deliver other services to the community. By 2012, the project had delivered 37,000 tonnes of CO₂ emissions reductions.

Cook stove project in Kenya

This project introduced efficient cook stoves to replace open-fire cooking in a programme covering three districts within Kenya (UNFCCC 5336). Significantly, the stoves have delivered a 67% reduction in the burning of non-renewable biomass. Other benefits include reduced poverty (due to lower expenditure on cooking fuels), improved indoor air quality, fewer burns and injuries from open fires and a decrease in attacks on female firewood collectors who no longer have to venture into remote areas to collect fuel.

offices will provide opportunities to install less energy-intensive equipment.

Questioning the need to travel

Business travel is a necessary part of the way we work – our ability to serve our clients largely depends on being able to visit their locations. Nevertheless, we continue to challenge ourselves on the need, frequency and mode of travel.

With an increasingly strong international portfolio, we have strengthened our video conferencing facilities as a way of reducing the need for foreign travel. This capitalises on an earlier strategy and has reduced the incidence of international travel significantly.

Opportunities and risk

From a sustainability point of view, business travel is a complex issue. It's important for building relationships, which is at the core of our brand, and it's also important in the delivery of our services. In certain circumstances travel is a necessity.

But business travel damages the environment and can put a strain on our people's wellbeing, and reducing travel can help cut costs. We want to strike the right balance.

Carbon offsetting

We are a carbon neutral company committed to reducing our overall carbon footprint. We seek to reduce our carbon emissions and offset those that are avoidable. Clear is approved under the UK Government's Quality Assurance Scheme for Carbon Offsetting, this ensures our offsets only go to Certified Carbon Reduction projects.

Since 2010, Atelier Ten has been involved in several different types of projects, spanning four continents.

Opportunities and risk

The environmental impacts of our business represent both a business risk and opportunity. For instance, our clients increasingly expect us to actively manage our carbon emissions and our reputation is influenced by our approach to being a responsible

business. So, effectively tackling our carbon footprint also gives us a chance to innovate and strengthen our reputation as a sustainability leader, differentiating us from our competitors. We also know that it improves employee engagement and increases their perception of Atelier Ten as a good place to work.

Cutting carbon also cuts costs because it's about reducing the energy we consume and the travelling we do, as well as the financial cost associated with our choice to offset. On the other hand, climate change poses other potential risks to our business including disruption to travel or energy, both of which are integral to the operation of our business.

Sustainable land use

Most of our land use impact occurs outside our direct operations and within our supply chain. However, we still want to do the right thing, so we encourage sustainable land use and biodiversity in our offices where possible.

Opportunities and risk

Given the nature of our business, our land use risk is small. But encouraging biodiversity within our offices gives us the opportunity to engage with our staff about the importance of biodiversity. And we can share the lessons we've learned with both our clients and suppliers.

Reducing our natural resource consumption

To minimise the impact of our resource consumption, we:

- challenge unnecessary consumption within our offices, whenever possible
- invest in lower consumption equipment in our offices
- proactively seek to reduce inbound packaging from suppliers
- buy products with sound environmental credentials, including those with a high recycled content, whenever we can
- re-use or recycle as much as possible.

Opportunities and risk

Clearly, the fewer resources we use, the lower our material costs, so managing our operations to reduce our consumption presents a good opportunity for us.

Paper

Paper is one of our most significant consumables. We buy 100% recycled paper for all printing and use environmentally approved products for much of our stationery. We also ask our staff to consider whether they really need to print at all.

Opportunities and risk

In a bid to reduce transport emissions related to traditional postage methods we endeavour, where appropriate, to send all correspondence electronically.

Communications

We place great importance on communicating effectively with our staff. This involves creating opportunities for people to ask questions and express their views, as well as sharing information with them.

By maintaining two-way communication, we help our staff to understand the challenges we face and contribute to a successful future for Atelier Ten. We have well established communications channels in place at both a corporate and team level to keep our staff informed and involved. In London, we meet quarterly as a company; this ensures that everyone has a clear sense of direction, that everyone has an opportunity to question our progress and that people can be inspired about the future of the company.

Opportunities and risk

We publish an annual calendar of meetings that is posted on our company notice boards. Giving visibility to all board meetings in this way helps staff to understand how Atelier Ten is managed and provides a touch-point for when they can expect information or an update.



The Saunders Building at Glasgow Academy; designed with flexibility in mind

Letter from Scotland

Bill Ritchie
Director, Scotland

2015 was a year of double celebration. In November we celebrated 5 years of operation in Scotland – established nearly 20 years to the week after Patrick founded Atelier Ten in London. In these five short years, we have enjoyed a tremendous reception in the local marketplace exceeding all expectations.

The year saw a number of projects successfully completed. Each project tells its own story about early support from our friends in the industry who had belief in our fledgling team – a team which already had some ‘previous’ in their passion for design and client care. The buildings that reached completion provide evidence of our commitment to design engagement while challenging convention across a variety of sector types.

At Glasgow Academy, the Saunders Building opened to critical acclaim. The new science building features a mixed mode ventilation solution with cleverly detailed routing of building services to maximise flexibility in use. A displacement ventilation system ensures that the auditorium is comfortable irrespective of the number of occupants. The project has been shortlisted for a RIAS (Royal Incorporation of Architects in Scotland) award at time of writing.

In the commercial sector, we completed One West Regent Street, which achieved a class-leading A rated EPC certification of only 8 kg CO₂/m²/yr without the need for any renewable technologies. Reducing the carbon footprint in this way delivers real capital cost and life cycle savings with the benefit of ‘future proofing’ the scheme against further legislative tightening of greenhouse gas emissions. The scheme also benefits from the ground-breaking work by our US colleagues in the field of health and wellbeing. The building’s central air handling plant unconventionally does not have any cooling coils. Clearly a further commercial

benefit for our design and build partner Sir Robert McAlpine, the real benefit is now being experienced by the building’s occupants who benefit from elevated provision of fresh air without the dehumidification which is often experienced in modern offices. The building was recognised by the Glasgow Institute of Architects (GIA) Awards in December. Further projects recognised by the GIA include the Shields Centre – a primary healthcare facility that won the overall award for sustainability.

Our fire engineering team shared in GIA award spoils with wins for St Brides School and the Theatre Royal extension in Glasgow where fresh thinking in our approach has created spaces otherwise unimaginable by mere code compliance. Our investment in advanced smoke modelling and evacuation simulation allows an unparalleled approach. And, with Scott Hall leading the team, we know that such computer modelling is sense checked by a former fireman. This investment in technology and research resulted in Michael Waters being invited to present to fire engineering students at Glasgow Caledonian University; see side bar. The fire engineering team is now engaged in a most exciting range of work with a particularly interesting challenge in developing a new fire strategy for the infamous Charles Rennie Mackintosh’s Glasgow School of Art which was ravaged by fire in 2014.

In Edinburgh, Angus Roberts completed his first year in the new Hanover Street offices and was joined by Ben Shepherd from the New York office to present a talk on behalf of the BCO titled “Greening Manhattan”. The new office is delighted to be enjoying a wide range of work including the University of Stirling, the new members pavilion for the RHASS at Ingliston and the new visitor attraction to house The Great Tapestry of Scotland.

Fire Team – memberships

Each member of the fire engineering team has a membership with the Institution of Fire Engineers (IFE). Through IFE membership, Scott Hall has been involved in a number of workshops, one of which was on the Design Verification of Fire Engineered solutions as part of a Scotland Building Regulatory System. The purpose of this workshop was to engage with stakeholders to better understand the issues and challenges involved in designing, submitting and approving a fire-engineered solution.

Lecturing at Glasgow Caledonian University

Michael Waters has been working with Glasgow Caledonian University on the delivery of both computational fluid dynamics (CFD) training courses and a CFD module on the Fire Risk Engineering degree (BEng Hons).

His expertise has helped both the local building authorities and the Fire & Rescue Services to develop a knowledge and understanding of CFD modelling while attending the course together with an Introduction to CFD Simulation of Fires using Fire Dynamics Simulator. This knowledge will be integral to the approval of innovative alternative solutions for both existing and proposed buildings in the future.

The success of his input into these training courses has resulted in the university incorporating his material in the Fire Risk Engineering degree programme at Glasgow Caledonian University. The module, an Introduction to CAD and CFD, consists of lectures and tutorials to third year students that provides them with a basic knowledge of CFD modelling and the benefits of its use in the industry today.

Can LED lighting save the planet?

LED light bulbs produce light at a fraction of the energy consumption of a traditional light bulb.

Mark Loeffler

Director, New Haven

During the multimedia warm-up to the keynote address at Greenbuild 2014 in New Orleans, the narrator declared that LED lighting is one of the top 10 technologies that can slow down climate change. More recently, our founding principal Patrick Bellew stated in CLAD Magazine:

“The one thing that’s made the biggest difference across the board is the arrival of the LED light bulb. It produces what we need at a fraction of the energy consumption of a traditional light bulb, and it doesn’t produce heat, so you haven’t got to air condition it out once you’ve got the lights on. That’s transformational in a major way.”

As a sustainable lighting designer with more than 30 years of experience, I fully agree with both assertions. But without thoughtful design, it is just another technology that can frustrate users and undermine energy and environmental gains. Atelier Ten’s lighting design practice is well-versed in the design, specification and application of LED technology to deliver exceptional visual quality, energy efficiency and carbon savings, in support of our clients’ ambitions for sustainable and desirable buildings. We understand how to design using revolutionary new form factors (beyond simple “light bulbs”) and to take full advantage of its inherent dimmability and unprecedented controllability of light intensity and color temperature. Our knowledge of healthy building issues enables us to also explore the application of circadian lighting to enhance physical, visual, and psychological wellbeing.

The market for LED lighting is led by the consumer electronics industry, not by the electrical commodities companies that we have conventionally associated with luminaires and lighting control gear. “Improvements” are made in a matter of months, not years in the way we were accustomed to thinking about slow advancements in incandescent, halogen, fluorescent and metal halide lighting. A new lighting system that we design and specify today will be obsolete before the project is built in two to five years. Rapid evolution means that we have to carefully specify the essential performance criteria and stay in touch with manufacturers to ensure that they understand what is driving our project. Our best applications are carefully designed but flexible enough to accommodate advancements between design and procurement and installation.

There is an urgent and growing market for retrofitting existing lighting systems with LED technology to reduce energy and carbon consumption as well as to improve controllability. LEDs are considered vastly better than compact and linear fluorescents. The public perception is accurate: LEDs provide superior color quality, controllability and lumen output per watt compared to compact fluorescents. But good retrofitting results from good redesign. A simple “one-for-one” replacement will seldom yield satisfactory results. That’s where Atelier Ten’s lighting design practice comes to the rescue.

We are currently working with Starwood Hotels and Resorts Worldwide – one of the world’s leading hotel and leisure

companies with more than 5,500 hotels operating in more than 100 countries under the St. Regis, The Luxury Collection, W, Westin, Le Méridien, Sheraton, Tribute Portfolio, Four Points by Sheraton, Aloft and Element brands – to develop a corporate LED Lighting Redesign and Retrofit Guide in tandem with writing new design standards for lighting quality and quantity in every typical space type. For nearly a year, we have been working with Starwood’s Architecture and Construction, and Environmental Sustainability teams to develop these new standards which will deliver considerable savings for energy consumption, operating costs and carbon emissions while improving lighting quality across their global properties in every brand category.

“LED lighting is one of the top 10 technologies that can slow down climate change”

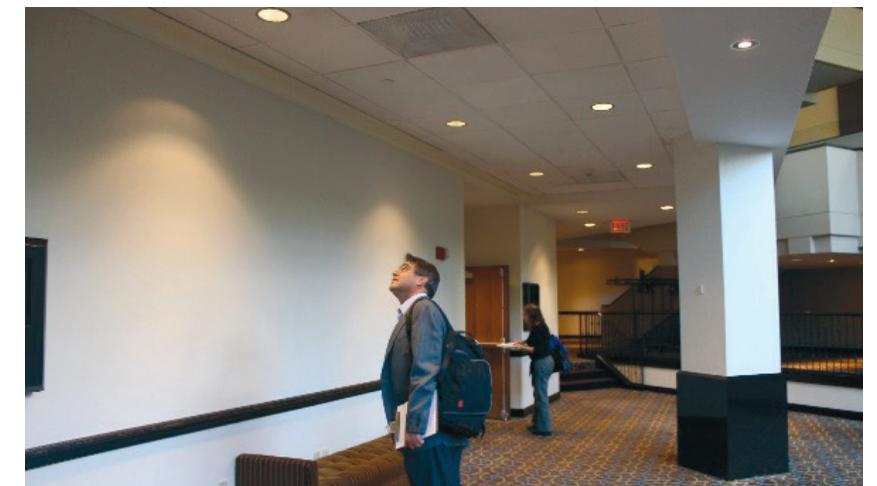
For Yale University, we are consulting with the sports facilities managers to convert existing metal halide systems to LED for hockey, tennis and other sports. Most recently, we’ve been consulting with Yale on the LED relighting of the iconic David Ingalls Hockey Arena, designed by Eero Saarinen (1958) and renovated by his successor firm Kevin Roche John Dinkeloo Associates (2008). We designed the current metal halide lighting system for that renovation project to double the rink lighting level while cutting lighting energy consumption in half. Now, Yale – recently a US collegiate national champion – seeks an even brighter level of illumination to satisfy TV broadcast needs. However, the Yale energy manager wants to ensure that we maintain or reduce Ingalls Rink’s current energy consumption. We are in the process of selecting the luminaire and control manufacturer that will be able to satisfy both goals. Not only will the new lighting be substantially brighter, we will be able to use its inherent dimmability to provide exceptionally uniform illuminance that is programmed to provide output matched to the activity and turn itself off when the rink is empty thereby

saving energy otherwise wasted by the current metal halide lighting that cannot be readily turned on and off.

For Harvard University, we have been involved in the sustainable restoration of a series of residential halls, known as the River Houses, with KieranTimberlake. For lighting, we have been encouraged to build a new vocabulary of luminaires to provide optimal lighting with minimal energy consumption. Not only has this contributed to exceptional energy performance and LEED credit accumulation, it has also given Harvard a testbed for continual evaluation and improvement of its lighting program. As the availability and cost-effectiveness of LED lighting has rapidly improved,

Atelier Ten and Harvard have kept pace so that the lighting design for our most current River House project will be entirely LED. We are even considering the use of “tunable” white LED lighting which will enable students to control the relative warmth or coolness of their task lighting.

Can LED lighting save the planet? With good lighting design, we are certainly trying.



Mark Loeffler and Rebecca Mintz survey hotel lobby lighting as part of the recent LED retrofit study

National Theatre: balancing darkness and light

Refurbishing a Grade II* listed theatre in London.

Jonathan Gittins

Associate Director, London

London's National Theatre has undergone extensive refurbishment and remodelling to transform this Grade II* listed building into a place that brings together world-class artists, emerging talent and the public. This £80 million project, known as NT Future, has created a new scenery art studio, a public viewing gallery as part of the remodelling of the workshops and the new Clore Learning Centre. The Cottesloe Theatre reopened as the Dorfman Theatre after a full modernisation programme including an improved foyer. In addition, the main foyers and public spaces of the National Theatre have been revitalised with the creation of new bars and cafés on the riverfront, a new bookshop, a new entrance and the landscaping of the public realm and terraces.

Atelier Ten designed the lighting throughout the new and refurbished areas of the National Theatre, working closely with the architect Haworth Tompkins and the theatre team.

Lighting designs had to be tailored to meet the technical and aesthetic demands of the diverse range of spaces. However, the overriding principle linking all areas was a desire to provide high-performance lighting solutions.

For the workshops and other back of house spaces, the main driver of the lighting design was functionality. At the time, LED was not sufficiently efficient at the high lumen outputs required, so the decision was taken to use high efficiency T5 fluorescent. Luminaires were selected with optically designed reflectors to ensure light was focussed where required.

One of the most challenging environments to light was the triple height paint studio. High illuminance and uniformity were essential on both the floor and the vertical paint frame walls where huge scenery backcloths are hand painted by the scenic artists. As such, Atelier Ten carried out extensive modelling to optimise the positioning and design of the lighting while co-ordinating with the rooflights above, finally settling upon a solution with a combination of wide beam and asymmetric reflectors.

The paint studio was designed to make the most of natural daylight from saw tooth northlights in the roof. This presented us with the opportunity to maximise energy savings from daylight dimming. The artificial lighting is DALI dimmable allowing the light output from individual rows of lights to be subtly adjusted as daylight levels increase to maintain a constant illuminance on the painting surfaces.

One of the most exciting areas of the project was the re-lighting of the existing foyers. It was felt by many that the existing foyer lighting scheme was overly uniform and bright and had moved away from Lasdun's original dramatic concept. We collaborated closely with Haworth Tompkins and the theatre team to develop a new lighting concept to reinstate the drama. The starting point was to return the diagrid of concrete coffers back to darkness to give a backcloth against which to add dramatic highlights.

The key to keeping the coffers in shadow was using carefully designed fittings to provide the circulation lighting. These were provided with

shielding louvres to prevent any unwanted spill light onto the coffers. This "darkness" was contrasted with focused highlights of warm white light to the Brutalist board-marked concrete fins and targeted lighting on tables and benches in the café and seating areas. Elements of accent were used to draw visitors to the cafés and bars using gold reflector cones in luminaires and red-sleeved pendants.

Atelier Ten worked with Aether Lighting and Haworth Tompkins to develop a family of luminaires that would bring unity throughout the new and refurbished spaces while providing the technical performance required.

Mock-ups and trials were used to establish the optimum LED source and colour temperature. Eventually a 2700K Xicato LED source was selected: it renders the concrete surfaces in a way that is reminiscent of the tungsten lamps within Lasdun's original vision.

Lighting controls are critical to delivering high-performance lighting systems. And from an early stage, we suggested using DALI control to enable the theatre not just to maximise energy savings but to provide maximum flexibility for the future.

Indeed, within the main foyers, the use of DALI control was key to success. The existing electrical wiring was relatively new, so to replace it with new power and controls was prohibitively expensive and would mean potential disturbance to the listed interiors.

Instead we designed the new controls around the existing mains wiring infrastructure using it for both



The foyer of the National Theatre, with Denys Lasdun's original intent for the dramatic interplay of light and dark restored

power and DALI addressable control. This meant that the existing fixed infrastructure could be retained while providing the client individual addressable control of each luminaire. This has delivered great flexibility. The new lighting can be grouped and controlled to suit the new space layouts.

This new lighting control system extends throughout the refurbished and new areas. The system uses occupancy sensing and daylight harvesting to dim and switch off lighting where it is not required. A graphical interface gives the theatre's engineering department straightforward control of the lighting.

They are also able to monitor energy use of the lighting through this, thereby providing opportunities for further savings in the future.

Through the careful design and specification of lighting and controls it has been estimated that the energy savings could be as high as 70%. The actual saving is still to be determined as the building beds into its first year of use, but one thing that is already clear is that the new lighting scheme has returned a sense of purpose and drama to the theatre.

Letter from Australia

Paul Stoller

Director, Australia

These are the times that try sustainability professionals' souls, particularly here in Australia. In the natural realm, two world heritage areas have suffered devastating climate-change related disasters: over 90% of the Great Barrier Reef bleached due to unusually warm water temperatures, and wildfires burned over 2% of the Tasmanian Wilderness after the hottest and driest spring on record. In the political realm, the change of federal government leadership late last year promised a bloom of environmental policy reflective of our new prime minister's previous positions on climate change (he doesn't deny it), carbon (he previously supported taxing it), and renewable energy (he wants to transform

meaningfully reduce their buildings' energy use. All of the best practices and industry leadership at the top of the industry has led to no industry transformation on sustainability. To paraphrase a colleague grappling with the same data: trickle down sustainability doesn't work.

Despite this backdrop of doom and gloom, there are reasons to be optimistic. Late last year, a ragtag rump of sustainability professionals successfully battled the Australian Building Code Board (ABCB), overturning that body's plans to further gut the already weak national energy code. The energy renegades are now moving to the front foot and will soon be

“ Public debate in Australia is moving the focus to holistic development that prioritises social and ecological sustainability ”

Australia with technology). Alas, almost no meaningful legislation or reform has been delivered, and climate change and environmental issues aren't even a minor issue in the upcoming elections.

Closest to home, and perhaps most painful of all, the Australian Sustainable Built Environment Council released a report enthusiastically titled “High Performance Buildings Open the Door to Australia's Climate Future,” outlining the incredible potential for the Australian property sector to contribute to national carbon reduction. Of course, incredible potential to improve also means our sector's current performance leaves much to be desired.

A few charts into the report and the damning evidence is made plain; over the past ten years, all of the enthusiasm and hard work of the green building movement here has managed to drive down commercial building energy intensity by all of 2%. With floor space up almost 20% over that same time, total commercial property carbon emissions are up almost 12%. Despite all of the extraordinary energy use reductions generated by the top tier property companies, which are now public knowledge thanks to the NABERS program mandatory carbon disclosure policy, it is clear that the vast majority of property owners have failed to

challenging the ABCB to substantially improve code in its next triennial update. In the world of sustainability benchmarking, the national church of sustainability – otherwise known as the Green Building Council of Australia – has taken a page from the Church of England and is recasting itself as a gateway organisation that embraces multiple pathways to sustainability. Former rivalries and feuds with other green development organisations have been quietly dropped, new partnerships and rating system alignment agreements have been loudly trumpeted. While the practical benefits of harmonised documentation are enticing to those of us in the design and construction trenches, the greater opportunity is for a unified front with all pushing to ratchet up codes, standards, and expectations. This could be the moment when the sustainability stick switches forward, driving building laggards up toward those leaders chasing the Green Star carrots.

Another reason to be optimistic is that Australia has the courage to invest in urban infrastructure again. The number of light and heavy rail lines and tunnels, highway tunnels, airports, and brownfield precinct redevelopments is staggering to those trying to resource the projects, and exciting to the rest of us looking forward to more viable public transportation options. Also encouraging is that

state governments, who are responsible for most of this development, are starting to think about development in a more sophisticated way than simply grabbing cash and handing land to private developers, which has been the prior modus operandi. Public debate about capturing infrastructure value and redirecting that into social infrastructure, and holistic development that prioritises social and ecological sustainability, has refreshed and reinvigorated a generation of planners and designers who previously spent much of their career simply face palming.

With a bit of luck, and continued concerted pressure from the building professions, Australia may yet move beyond the slapdash infrastructure development practices that have been parodied so effectively – and hilariously – in the hit Australian television show “Utopia” (called “Dreamland” in its US broadcast). Atelier Ten is working at the vanguard of this enlightened practice, supporting brownfield development in Sydney that will transform an abandoned harbourside concrete parking lot into climate positive, transit-oriented development. Atelier Ten is also helping shape a regenerative community in the Gippsland Lakes region of eastern Victoria that aims to restore the local coastal ecosystem, and create an equitable, engaged community that is fed by its own renewable resource networks.

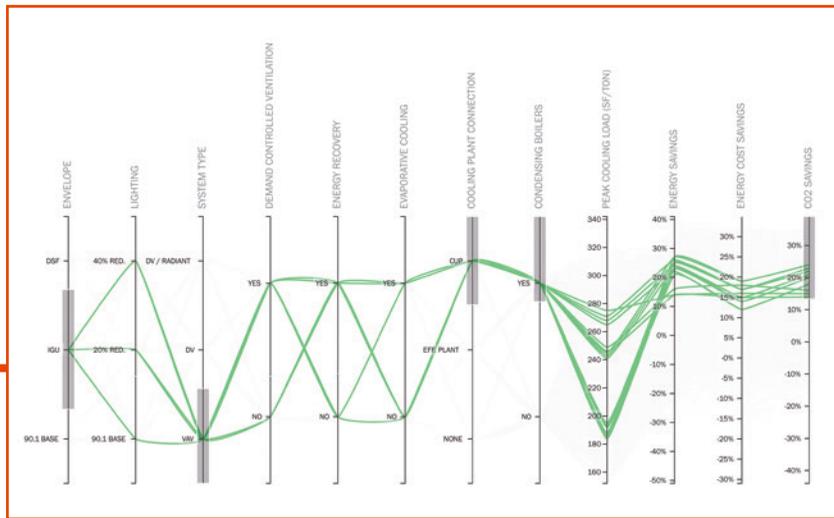
Finally, despite all threats of economic slowdown and government budget cuts, Australia continues to invest in

its cultural heritage. Atelier Ten is working currently on the Sydney Modern expansion of the Art Gallery of New South Wales, which will create a major new venue for contemporary art and open up access to more of the gallery's substantial permanent collection. In a formal dialogue with the once-daylit galleries in the heritage building, the new pavilions will display art in natural light deep into the building. Across the continent in Perth, Atelier Ten is excited to begin Scheme Design work for the New Museum of Western Australia, a similarly ambitious doubling of that state's leading cultural institute. This project is particularly exciting as it aims to showcase technologies inspired by natural and local precedent; Atelier Ten having developed many labyrinths inspired by the Barossa and Compass Termites of Western Australia, finally gets to develop one just down the road from nature's originals! Atelier Ten will also be designing a district energy plant for the larger cultural precinct surrounding the museum, which creates an opportunity for a step-change in energy used across the entire campus. It is exactly this kind of step change in performance that our industry must achieve, everywhere, to break past the conservative property development norms and begin to approach meaningful sustainability achievement. I'm confident that Australia can do this. I'm also confident that this next decade of green building Down Under will bring about the sustainability transformation needed to meet the country's CoP commitments and in turn protect the Reef, the Wilderness, and all of its World Heritage sites.



Render of the proposed extension for the New Museum of Western Australia in Perth

Example of a parametric toolset generated to refine approaches to building form and systems in order to achieve specific energy goals



Tools

Reinier Zeldenrust
Head of Building
Physics, London

Making something is easier when you can tinker as you go along. For example, when making pasta sauce, you can taste the sauce, and immediately know whether you need to add a pinch of salt or some lemon zest. Even in product design, you can make a prototype and feel the shape. Buildings are different – it can take years to design and construct a building. Many clients and architects aim to be like chefs, in the sense that they want rapid feedback to tune their development or their design. So engineers rely on intuition and tools to evaluate design options and answer questions like:

- How much plant room space can we save if we go with all recommended passive design options?
- Is it possible to use floor-to-ceiling glazing in Chicago and still be comfortable on a cold winter day? No? What if we use triple glazing?
- How often will occupants need to turn on the light if they are sitting at the fifth desk from the window?

However, a lot of time gets wasted transferring information, rebuilding models and extracting and packaging the results. This means architect ‘chefs’ cannot taste and readjust as quickly as they would like – in our industry, feedback loops have been typically counted in weeks, not hours.

To enable more rapid feedback, Atelier Ten have been working on new tools and methods to shorten these cycles.

In the early design stages, we focus on enabling exploration – we simulate tens of thousands of possible solutions, and use tools like D3 parallel coordinate charts or platforms like Speckle (www.speckle.xyz) to allow designers to make their own design trade-offs (e.g. window-to-wall-ratio vs façade overhang vs window g-value). Recently, we worked on a daylight exploration tool that allows testing of various façade options in terms of daylight performance and glare probability in seconds instead of hours.

Once the design is more established, the focus shifts to optimisation. Often, there is a particular trade-off (such as solar gain versus daylight) that benefits from a highly optimised solution and relies heavily on architectural choices. In this situation, we create custom tools to evaluate the trade-off in architectural design environments such as Grasshopper. With the compliance calculation happening in seconds instead of days, architects can fine-tune their design without sending information back and forth. When packaging of the results is not an option, we work with Flux (www.flux.io) to facilitate easy exchange of the most essential data.

As designers and engineers, we love problem solving. And thanks to the tools we develop and the platforms we explore with our design partners, all of us can focus on just that – solving our part of the design puzzle to ensure a great overall end product.

Letter from Singapore

Henry Woon
Director, Singapore

It has been more than a year since we established our office in Singapore. While continuing to work on our long-term Project Jewel at Changi Airport, efforts have focused on diversifying our work portfolio. One such recent high-profile appointment is on the redevelopment of Singapore’s Safari Park in Mandai: we are providing environmental design consultancy as well as overseeing the Masterplan Sustainability Framework for both the existing park and the proposed development.

In the private sector, we are working on a mixed-use service apartment and retail development in the Orchard Road area that is targeting both Green Mark and LEED Platinum ratings. We are also working on a privately owned library refurbishment project in Kuala Lumpur, Malaysia. And we continue to bid for projects and competitions in Singapore and the wider South-East Asia region.

Last year, we spoke of a challenging year to come for the Singapore economy. And sadly, we were not wrong. The economic slowdown in China appears to have had a significant impact on major neighbouring markets including Hong Kong and Singapore and in sectors such as property, logistics and the oil and gas industry. The general consensus is that conditions in Singapore will remain unsettled especially when set against difficult global economics headwinds and are likely to remain as such for the next two to three years.

As a consequence, the Singapore government has initiated a series of state funded projects in an attempt to boost the economy. We know it is important to tap into these opportunities. Satisfyingly, we are beginning to gain traction and recognition among Singapore government agencies such as Changi Airport Group, National Parks Board, CapitaLand, Temasek and JTC Corporation: developing and strengthening these relationships will continue to be a priority.

Beyond Singapore, we continue to explore opportunities in up-and-coming markets such as Malaysia, Indonesia and the Philippines focusing on clients who understand the value of sustainability and high-quality environmental design for their development. We strongly believe there is a role for Atelier Ten in these markets.

Healthy Buildings in Singapore

Similar to many of the international standards on healthy buildings, Singapore’s building regulation and environmental benchmarking systems have an emphasis on indoor air quality. Both encourage natural ventilation, seek to reduce VOC-emitting materials and ensure minimum fresh airflow rates for mechanical ventilation systems. Significantly, natural daylight and “views of greenery” are becoming more commonplace within built environment design parameters in Singapore.

However, for Singapore as a tropical country, the context and perception of healthy buildings can be quite different. Client requirements for healthy buildings often focus on ventilation systems and air-conditioning plant capacity to ensure a cool and breezy environment. This is especially true during the annual “haze season” when the farmers in neighbouring Indonesia burn their land in preparation for palm tree farming. As such, the goal for most building owners is to ensure that their buildings are isolated from the outdoor environment. The high-performance MERV filter has become the popular upgrade to ventilation systems.

Without regular servicing, moisture, condensation and dust build-up in air-conditioning units can be a source of sick building syndrome. Maintenance of these units is key to ensure healthy indoor environments especially within domestic settings where the situation is harder to manage and therefore more of a concern.

Letter from Bangkok

Naree Phinyawatana
Director, Bangkok

Sixth Element, a new mixed-use resort masterplan in Sattahip



The green building sector in Thailand continues to grow with support from both the government and an increased recognition of climate change and global warming. Indeed, Thailand participated in the 2015 United Nations Climate Change Conference in Paris and is now planning to reduce emissions by 20% over the next 15 years as well as double renewable energy production by 2040.

It was the 21st yearly session of the Conference of the Parties (CoP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 11th session of the Meeting of the Parties to the 1997 Kyoto Protocol. Significantly, the conference negotiated the Paris Agreement, a global agreement on the reduction of climate change, the text of which represented a consensus of the representatives of the 196 parties who attended.

“ Atelier Ten Bangkok is at the forefront of the emerging health and wellbeing design trend in Thailand ”

In parallel, there has also been a growing awareness of “healthy buildings” within Thailand’s building and construction industry and a recognition of the relationship between design and health and wellbeing.

Atelier Ten Bangkok has been consulting with Fragrant Group on a new mixed-use resort masterplan in Sattahip called the Sixth Element. The primary focus of the project has been the promotion of active lifestyles and health and wellbeing. Serving as “holiday” or second homes, the project, with a beachfront on the eastern seaboard, has focussed on the creation of both healthy indoor and outdoor spaces that promote not just active family lifestyles but create spaces for families to spend quality time together as well as providing areas for quiet relaxation throughout the masterplan. A lush

and natural landscape, which stretches over 300 meters, connect the residential towers and the Evason Resort to Na Jom Tien beach.

Moreover the project, which sits over a developed site, will incorporate landscape features such as bioswales, rain gardens and a native vegetation zone. Natural vegetation is deemed key to promoting biodiversity around the site in order to create a healthier environment for residents. The project will also provide a cycle network and bicycle nodes to promote a cycling culture within and around the project site.

At the Sixth Element, Fragrant Group will also provide energy recovery ventilators for all residential units as part of the project’s goal to providing a healthy environment for its residents. In a tropical climate setting, a central ventilation

system is not so common even for high-rise residential buildings because of an abundant availability of natural ventilation. Nevertheless, because of the recent haze from Indonesia that has travelled as far north as the eastern seaboard of Thailand, energy recovery ventilators will filter as well as exchange indoor cool air with outdoor tempered air to provide fresh outdoor air, while minimising energy use to remove humidity from the air. Overall, the environmental design strategies work together to create an integrated, active and pleasant environment for residents and guests who will spend vacation time at Evason resort.

Atelier Ten Bangkok is at the forefront of the emerging health and wellbeing design trend in Thailand and the Sixth Element, when complete, will serve as an exemplar project.

Façade tectonics

Claire Maxfield
Director,
San Francisco

Glass, universalism, and sustainability

Our fascination with glass and the push for more transparency has led to all-glass buildings around the globe. Highly glazed buildings are popping up in every nation, climate, urban context, and for a wide array of building uses.

The long history of transparency and glass within buildings has been documented well by others and will not be repeated here. But it is important to note that the rise of all-glass buildings, especially curtain wall envelopes, is strongly related to the history of air conditioning. Air conditioning is what made the dream of all-glass buildings habitable and therefore possible in practice. As we strive to reduce energy use and design sustainable buildings, we take aim at mechanical systems; but to address the problem fully we must also re-assess the viability and appropriateness of all-glass envelopes.

Glass is a poor insulator which leads to higher heating energy use and wintertime thermal discomfort in cold climates; in warm climates it admits solar gains, leading to high cooling energy use and summertime thermal discomfort. Excessive glass creates high contrast between the bright building perimeter and darker internal spaces, and low-angle sunlight causes glare.

The prevalence of all-glass towers is a symptom of a larger problem of universalist design, which posits that a highly engineered, efficiently

manufactured design can be deployed everywhere in equal measure, negating cultural or environmental differences. The difference between the design of the envelope for a commercial tower in China and a high-end residential building in Seattle is surprisingly small, despite vast differences in culture, politics, climate, urban context, program, and even the method of architectural production between the firms that design these buildings.

Judging from the uniformity of glass towers in recent years, attention to the specifics of each building and site is not common. As Western architects practicing globally, it is imperative that we acknowledge this pluralism, and not retreat back to the view that one architectural attitude is correct in all places. Therefore we cannot adopt the position that maximum transparency is both understandable and appropriate in all places.

Critical regionalism: a reintroduction

In 1983, Kenneth Frampton introduced a thesis called “Towards a Critical Regionalism”; this theory may be in need of reintroduction today. At the time, the conflict between modernism and post-modernism was still being resolved. Critical regionalism refuted them both, proposing a third way which was neither universal (modernist) nor nostalgic (post-modernist), but required that architecture respond to its context. Rather than reference vernacular forms, however, Frampton proposed that we find ways to respond to regional

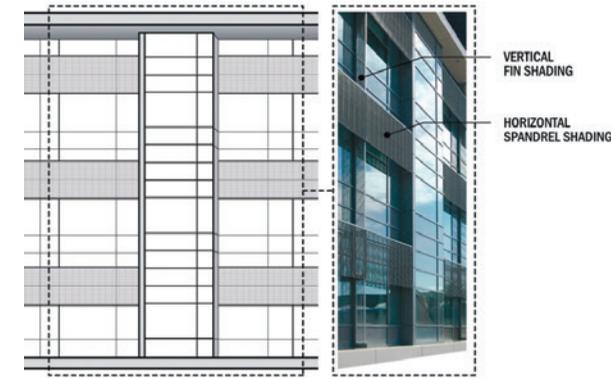
conditions such as topography, light, temperature, and urban context. By making these local conditions generative, one was inherently creating a distinct identity; a specific architecture; a sense of place.

Frampton was talking mostly about a psychic connection to a place, its history, and the local conditions that spawn creative diversity. However this idea of creating “place” is clearly related to current concepts of sustainable design, which is predicated on climate-responsiveness. Though it is rarely discussed in these terms, the process of sustainable façade design has its roots in critical regionalist ideas. In practice as a sustainability consultant, each project indeed starts with an assessment of the factors inherent to the specific site; in essence, we establish the elements that define a sense of place. ‘Place’ includes the local climate (temperature, humidity, insolation, wind speed and direction, psychrometrics, sky conditions, etc.), the immediate context (adjacent buildings, landscape, and topography that may block or exacerbate climatic factors), the building’s program and interior space planning, each project’s primary sustainability goals, and each project’s architectural agenda. Taken together, these factors establish the conditions for the envelope design, and what will make this envelope distinct from the next. These factors produce wide differences across Atelier Ten’s portfolio; they both generate and respond to a unique sense of place. They also respond to local conditions



Program drivers for envelope design

Glazing types to address daylight, solar gain, heat loss, and glare



External shading design for solar gains, thermal and visual comfort

The resulting façade is a highly nuanced response to both the performance objectives and need to create an architectural sense of place. The final design uses transparency carefully and where it will have the greatest spatial and environmental impact.

Conclusions

The idea of glass buildings has seduced architects since the modernist era, if not earlier. They hint at glittering, crystalline, layered forms; highly engineered and efficient structures; or at a seamless architecture. However our interest in these ideas has led to an architecture which is deployed everywhere with little cultural or climatic inflection. Critical regionalism offers a reminder that creating a sense of place and responding to context is wholly compatible with great contemporary design. It leads us towards a more nuanced use of glass and transparency, and towards an architecture with greater meaning and smaller environmental impact.

in a stylistically abstract way, without necessarily resorting to a neo-vernacular approach.

Critical regionalism is therefore a useful framework for assessing glass in buildings because it requires us to look not just at building performance, but at the cultural relevance of the highly glazed design. As part of our sustainability mission we must address the underlying idea of universalism that begets highly glazed buildings.

Case study: transparency, place, and sustainability

Salt Lake City is a place of extremes. In summer it is extremely hot with strong solar insolation. In winter it is very cold, and it is comfortable (as defined by ASHRAE) for few hours of the year. In addition to these climate factors, the L.S. Skaggs Pharmacy Research Institute in Salt Lake City has a distinctive site: it is a gateway to the health sciences campus; it has an expansive view of the campus on one side and a close-up view of the Wasatch Mountains on the other; it is attached to an existing 1960s science building. Last but not least, the laboratory program and user preferences lend themselves to regular, open lab modules combined with small cellular offices.

From a practical perspective, the building's southwest orientation, together with the extreme climate, means that the façade has to respond to many factors: solar gains in summer,

conductive heat loss and thermal comfort in winter, year-round glare from low-angle sun, and daylight access and distribution.

The initial design concept included all-glass façades, however heat loss through envelope conduction can only be addressed by adding insulation, and to avoid thermal comfort "cold spots" this insulation must be evenly distributed in occupied spaces. The amount of vision glazing on the primary façade was reduced to 34% while the area of insulated spandrel panel was increased. On secondary façades the glazing is reduced even further, and cavity-wall insulation provides an R-24 assembly (U value of 0.04 W/m²K).

The best way to keep occupants from overheating on a sunny day is to prevent solar gains from entering the building in the first place: the reduced area of glass is the first step. External shading incorporates mesh screens parallel to the façade along with smaller vertical elements. The parallel shades are held off the façade to provide shade without blocking the view itself while fritted, low-e glass also reduces solar gains.

Useable daylight is often confused with maximized daylight. However too much daylight near the façade can create high contrast compared to the interior spaces and is often simply too bright for day-to-day work. Useable daylight is the right amount of daylight for a visually comfortable workplace while

reducing the use of electric lighting. The façade design started with sizing the right amount of glazing and positioning it correctly in each office. The external shades block direct sun but allow indirect light into the space, creating evenly-distributed daylight conditions. Daylight simulation was used to determine precisely where there would be useable daylight, and therefore where it was worth the cost to install daylight-responsive lighting.

To promote visual comfort, both the envelope and interior design were considered. Reducing the glass area and providing external shading reduces the amount of time occupants can see the sun directly, improving comfort. Turning desks towards side-walls meant that no one looks directly out the window in the afternoon, nor would they see veiling reflections from the window on their screens. Bright interior finishes helped distribute light around the room, reducing contrast. Finally, interior operable shades could be used for those times when glare was still a problem.

Taken together, the need for spandrel, fritted glass, shading panels, and solid wall allowed the architects to create a patterning on the southwest façade. The result is a textured surface that introduces subtle color shifts that add depth and variation to break up the mass of the building. The façade's patterning responds to the use of space behind the envelope, thereby registering the function and occupancy

of the building in an abstract manner. The shadows, brightness of the frit, and reflection and transparency of the glass changes over the course of the day as the sun moves, thereby avoiding a single, static image of the building and instead providing a dynamic impression though all elements are fixed.

Transparency is used to amplify the research function of the building. While the southwest façade uses vision glass to express the regularity of office functions, the north and east

façades respond to the spacing of lab benches. Lab users can see through the entire mass in narrow slots aligned with the benches; this privileged view at the bench expresses the building's priorities far more than a uniform glass treatment would. Larger transparent areas are reserved for the atrium, where the glass expresses a tension with the existing building, provides views from multiple levels and vantage points in plan and section, and where users can choose how to occupy the space in response to interior conditions.



The final façade of L.S. Skaggs Pharmacy Research Institute, reflecting the local landscape

Letter from Doha

Qatar has considerably increased its efforts aimed at protecting the environment and fostering a culture of sustainability.

Anuran Wickramasinghe
Director, Doha

Following many years of rapid expansion and growth, Qatar's "look ahead" plan now places significant emphasis on the preservation of the natural heritage of Qatar and protection of the environment including air, land, water and biological diversity. One of four facets of the Qatar National Vision 2030 is the encouragement and promotion of environmental institutions: institutions that build and strengthen public awareness about environmental protection and the greater use of environmentally sound technologies. It recommends the formulation of a comprehensive urban development plan for Qatar that adopts sustainable policies for urban expansion and population distribution. A year on from establishing a practice in the region, as engineers and environmental designers we see many opportunities to share our knowledge and experience within the scope of QNV 2030. This is best illustrated by our appointment to contribute to the Urban Design Compendium for Qatar. The Urban Design Compendium seeks to establish livability and sustainability as the main criteria for urban design best practice in Qatar.

"Qatar has considerably increased its efforts aimed at protecting the environment and fostering a culture of sustainability," Qatar Green Building Council (QGBC) director engineer Meshal al-Shamari said at a recent conference, "Continuing to play a significant role in the green sector, the government has established multiple campaigns focused on raising awareness about energy and water consumption. The same efforts have been extended toward the construction and waste management sectors." It is against this backdrop that we have forged relationships with organisations such as the QGBC and the newly formed CEBRE (Constructing Excellence in Qatar powered by British Research Establishment) promoting excellence in delivery across the sector in Qatar.

Despite weaker activity in both the manufacturing and oil sectors, the Qatari economy expanded by 4% in the final quarter of 2015 according to the Ministry of Development Planning and Statistics, mainly driven by sectors other than the energy sector. Qatar's successful bid for the 2022 World Cup is accelerating large-scale infrastructure projects which include the light rail system, metro system, construction of roads, a new port, stadiums and related sporting infrastructure. Qatar has undertaken a number of structural reforms intended to enhance the entrepreneurial and investment regimes, aiding the transition away from dependence on the hydrocarbon sector.

As such, Qatar aspires to be a leading financial and business hub, facilitating private-sector growth outside of the oil and gas industries. MANATEQ, Qatar's largest master developer of economic zones is tasked with spending over QAR 20 billion on the development of three new sites that will collectively cover an area greater than 70 square kilometres. We are currently designing eight commercial buildings on one of the sites, Qatar Economic Zone 1 (QEZ1).



The site for the Msheireb Downtown Doha project in November 2012



Construction of Downtown Doha well underway, as of April 2015

It has been a challenging year for us. We are a new consultancy in Qatar and one that promotes healthy buildings and sustainable engineering in a country where energy prices and petrol are low. At QAR 1.33, petrol is around 25 pence a litre. Having said that, we are encouraged by the interest shown by some to develop environmentally sound buildings. We have a small team at our offices in the Msheireb area of Doha where we abide by our principles of conserving energy and operating efficiently. We recycle paper and operate our lighting and air conditioning only when necessary. We are exploring ways to recycle paper gathered from the many tenants in our building. We participated in the QGBC "Paperless Day Event" event in April, ensuring that our photocopier remained dormant the whole day!

At a recent meeting with us, a Qatari businessman expressed his preference for international consultants who have a presence in his country, living here and understanding their way of life, allowing that to influence the way buildings and suburbs are shaped. Qatar enjoys paradisiacal weather for

three to four months of the year and integrating the indoor with the outdoor makes a building far more inviting to occupants. This is only understood by someone living here. We discussed masterplans that emulate the sustainable villages of old, with narrow "sikka" (shaded alley ways) that open out to a "baraha" with a mosque and amenities, minimising long car journeys to destinations. It is heartening to hear such values and sentiments expressed, supporting our approach to masterplanning.

We continue our presence at the Msheireb Downtown Doha project as the LEED Consultant for Phase 3 of this 26-hectare sustainable regeneration project that dominates the skyline in the centre of Doha. LEED Gold is targeted for all buildings on this impressive site, where some buildings have already been commissioned and occupied. We look forward to a busy year ahead while bidding and working on projects in a region that is placing sustainability high on the agenda for future developments.



Atelier Ten provided research for this report from the Urban Green Council on the lessons that New York can take from its peer cities

Urban green

Kathy Ng
Business Development Leader, New York

Worldwide lessons

Mandatory blower door testing in London, a unified green code in Singapore and building asset ratings in Sydney are just a few of the energy policies and strategies being used by global cities to advance their energy efficient economies.

In 2015 Atelier Ten in New York partnered with Urban Green, the New York affiliate of the USGBC whose mission is to transform NYC buildings for a sustainable future, to research energy efficiency codes and policies in five global cities. Dubbed Worldwide Lessons, the goal of this research report was to inform strategic decision-making in New York City and help advance the goals of the ambitious 80 by 50 climate action plan being championed by Mayor Bill de Blasio.

For Atelier Ten, this was an opportunity to showcase our global reach by

highlighting Atelier Ten's offices in 4 of the 5 peer cities: London, Singapore, San Francisco and Sydney (Frankfurt is the 5th peer). Building on efforts started in 2014 to foster more international collaboration, this project brought together the collective knowledge of Atelier Ten into an impressive 130-page technical report.

The three key outcomes developed for New York included:

- energy codes must shift towards performance based outcomes and away from prescriptive solutions
- building energy labeling programs create awareness that changes decision making
- a more educated workforce improves building outcomes.

Targeting both commercial and residential buildings in each of the five peer cities, the areas of investigation

included: **climate, cultural context, energy codes, energy efficiency policies, green building policies, code enforcement, training, construction methods and materials, construction design process.**

Distilling the findings into a brief summary was a challenging task, but a number of key trends and findings repeatedly came to the forefront of discussions with Urban Green.

Climate

Climate matters. New York City has the most severe climate of all the peer cities. Frankfurt and London's conditions are similar but milder than New York City's. Singapore's equatorial climate requires no heating throughout the year, making it unique among the peer cities. Local climate was confirmed to be an important driver of specific energy code requirements and policies.

Energy code development and structure

London, Frankfurt and San Francisco have implemented energy codes that shift compliance away from prescriptive requirements to focus on whole building performance metrics.

being surprisingly low, London is the only city that requires air leakage testing. This ultimately leads to more carefully constructed envelopes. Generally, cities with colder climates place a higher priority on air leakage than cities with milder climates.

“ Education is key to improving building energy efficiency ”

London uses carbon emissions as its compliance metrics, while San Francisco has developed time dependent valuation (TDV), an hourly estimate of source energy specific to California. Both of these shifts are in part a result of having strong climate regulatory policies in place at the state or national level.

Energy code basic elements

A comparison of the minimum performance requirements of building envelope components within each energy code was also conducted. This was to determine the key differences between cities.

Infiltration: Frankfurt has the most stringent air-tightness requirements while London has the least stringent. Despite the air-tightness requirements

Insulation: Similarly, the minimum R-value of opaque wall insulation is also highest in cities with colder climates and less stringent in cities with warmer climates. New York City is the outlier in this category, as minimum insulation R-value is 40% less than its cold climate peers Frankfurt and London (R-12 required compared to R-20 average).

Fenestration: The warmer climate cities have more stringent requirements for fenestration with Sydney and San Francisco requiring the most protection from solar gain. New York City falls in the middle and Frankfurt and London have the least stringent requirements.

Building labeling

Energy Performance Certificates or Building Energy Labels, both of which

are mandatory in the EU, have not made their way to US cities. New York and San Francisco are the only peer cities without mandatory energy labeling. In Sydney, the energy-labeling program has resulted in large improvements in voluntary energy efficiency improvements for commercial real estate. London also requires existing buildings to meet minimum performance criteria upon sale or lease. Unlike building codes that often only apply to new construction, building labels can help drive voluntary investment in energy efficiency.

Education and training

Educating designers, construction trades and building owners is also a critical aspect of improving building energy efficiency. In the United States, education is localised and as such, very little co-ordination exists between trade groups, NGOs and educational institutions. In the other peer cities, education appears to be better organised and strategised at a national level. The EU BUILD UP Skills Program helps member nations conduct a skills assessment and the subsequent training roadmap that prioritises development of the necessary skills to meet the goals of achieving near and net zero energy buildings.

People-based management

It's our people, our clients, our valued suppliers and the communities and environment we work in, that make us who we are.

Developing our people

To deliver our business passions we need people with the right skills, vision and courage. At Atelier Ten, we value promoting from within and seek to build a high-performance organisation through fair reward and recognition.

Our people are encouraged to help deliver our strategy and achieve superior business results by applying their functional expertise and stretching their capabilities. It is their expertise and talent that are key to unlocking Atelier Ten's full potential and delivering responsible, sustainable growth in the coming decades.

Opportunities and risk

This is a focus area for us because we believe attracting, employing and developing people with exceptional skills who share our values provides us with a competitive advantage and is critical to our long-term sustainability.

Recruitment

Recruitment is managed on a local basis by each office and employment is offered and provided based on merit. Every person applying for a job is evaluated according to their job-related skills, qualifications, abilities, aptitudes and alignment with our core values. Where we can, we seek

to ensure strong internal candidate representation for roles, supplemented by external recruitment.

Learning and development

Learning and development equips our people to do the best they can and we continue to invest in this. Our learning and development opportunities range from creating bespoke training programmes company-wide to individual training on specific software programmes to community engagement. In addition, our training programmes are structured to meet and exceed the requirements demanded by the professional institutes within our industry.

We're committed to treating our people with respect, promoting equal opportunities and ensuring a safe, pleasant and welcoming workplace for all. We have a good level of employee engagement – reinforced through regular communication – ensuring that business information is shared appropriately, and that our staff are given every opportunity to participate in discussions on key business issues.

As part of the mandatory induction process all employees and agency contractors receive training on health and safety, our Code of Conduct

London staff photo on Atelier Ten's 25th birthday



including our environmental obligations, and anti-bribery and corruption.

Employee wellness

In addition to the safety of our staff we are also committed to improving overall health and wellbeing. To this end, we have a number of initiatives to encourage healthy lifestyles. In London, these include:

- flexible working practices
- Atelier Ten funded healthcare through Simply Health and BUPA
- a "cycle to work" initiative which provides a tax efficient way to save on the cost of a new bike if it is used to cycle to and from work
- free annual eye tests
- up to £160 towards the cost of new glasses (through Simply Health)
- fresh fruit which is delivered twice weekly
- participation in company sponsored softball and football league
- participation in company sponsored yoga classes
- encouraging an active lifestyle by providing facilities such as bike racks and showers.

Employee engagement

Providing an environment and culture in which our people can and want to

give their best is a priority. We regularly seek feedback from employees on a variety of matters and in a variety of ways. We have a good level of employee engagement – reinforced through regular communication including all-office and team meetings – ensuring that business information is shared appropriately, and that our staff are given every opportunity to participate in discussions on key business issues.

Although there are some significant differences in opportunity, we get consistent feedback that our people are energised by the scope of their jobs and the freedoms they have to make decisions, and impact the business. We continue to work on encouraging a more open environment for our people.

Ethnic background balance

In 2015 we were able to demonstrate that our ratios met the equal employment opportunity criteria. No affirmative action plans were required.

Helping to address the skills agenda in the UK

Having a pipeline of people with the right skills to enable engineering research, development and design is crucial for us to grow in the UK and for us to compete globally. We promote engineering when we can and have

developed a strong relationship with City of London Academy Islington where we have introduced a weekly after school Engineering Club and we help out on STEM days.

Gender balance ratios

Improving gender balance within engineering is a priority for us, which we are addressing through targeted programmes to promote engineering careers among young people.

At the end of 2015, women accounted for 40% of our London headcount and 34% of our total UK workforce. Within technical roles, women held 31% of positions within London and 25% when measured across all UK offices. When compared against industry averages, these indicators are very positive. BSRIA reported in November 2015 that women make up just 11% of the construction workforce in the UK and, more significantly, that the UK has the lowest proportion of female engineers in Europe, making up only 14% of entrants to engineering and technology undergraduate courses. Women make up a much smaller 3.4% of all engineering apprentices.

According to figures from STEM (Science, Technology, Engineering and Manufacturing), excluding health-



Invisible Architecture, our new book, published for our 25th anniversary



related occupations, the percentage of women in science, technology and engineering occupations has increased in the last few years, to a still very modest 13%.

This was supported by an article in Modern Building Services who reported in early 2016 that the UK sits 28th out of 28 in the EU league table for numbers of women in engineering. Just 9% of registered UK engineers are female compared to 18% in Spain, 20% in Italy and 26% in Sweden.

We also measure the ratio of males to females in our senior management team and compare this to the overall male-female mix of our UK workforce. The indications are that these ratios are not in line with the organisation overall and we continue to encourage more women to fill these positions.

Employee turnover

General employee turnover is measured as a function of our success in retaining staff and our ability to attract new employees as needed. This level of turnover is within expected parameters.

Employee turnover under two years

We also measure turnover relating specifically to employees who have been with the business less than two years. This measure is an indication of how well we recruit and then retain our employees so that they can make a

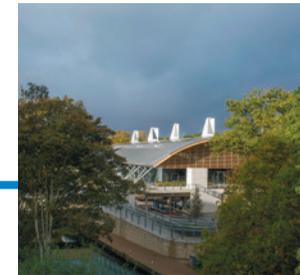
contribution to the business. In 2015, five people left Atelier Ten who had been with us for less than two years and, of these, one left the UK to return to their native homeland and one returned to full-time education.

Publications

As part of our 25th anniversary year celebrations, we worked with Caro Communications, a PR agency specialising in architecture, interiors, design, retail and lifestyle public relations. As a result, we managed to generate a fair amount of interest in our work in 2015 and contributed a number of articles to a range of international publications including: Archilovers (Italy), Architects Journal (UK), Bloomberg Business (US), Building Industry Hawaii (US), Building Magazine (UK), Detail (Germany), Evening Standard (UK), Inhabitat (US), Ktirio Magazine (Greece), Metro (UK), New York Times (US), RIBA Journal (UK), RCI (Italy), Royal Horticultural Society (UK), The Independent (UK) and a UKGBC Publication (UK).

Awards

Innovation can be scaleable, and since 1990 Atelier Ten has been winning awards and plaudits not just for our headline-grabbing, large-scale projects, but also for the step change in energy efficiency we can effect in smaller scale buildings.



Living Planet Centre, WWF Headquarters, UK

- RIBA National Award
- RIBA South East Award
- RIBA South East Sustainability Award
- BCO South East Corporate Workplace Award
- BCO London & South East Innovation Award
- BCO National Innovation Award



The Barn, University of Nottingham, UK

- RIBA East Midlands Award
- RIBA East Midlands Sustainability Award



The National Theatre, UK

- RIBA National Award
- RIBA London Award
- RIBA Client of the Year Award
- Commissioning Excellence, NLA Award
- Public Buildings - Built Winner, NLA Award



South Australian Health and Medical Research Institute, Australia

- Laboratory of the Year Award



One West Regent Street, UK

- Offices/Commercial GIA Award



St. Brides Primary School, UK

- Education GIA Award



Glasgow Theatre Royal, UK

- Leisure/Arts GIA Award



The Shields Centre, UK

- Sustainability GIA Award

Memberships

- AIA NY COTE, US
- Architecture+Design Sustainable Design Leaders Group NYC, US
- ASHRAE Certification Committee Chair, US
- ASHRAE 90.1 Voting Member, US
- Associate of the Dementia Services Development Centre, Scotland
- British Council for Offices national panel to review BCO Awards Application & Assessment Criteria, UK
- British Council for Offices Scottish Chapter Vice Chairman, Scotland
- British Council for Shopping Centres Scottish Committee Member, Scotland
- British Expertise, UK
- Chartered Institute of Building Services Engineers, UK
- Dementia Services Development Centre Associate, Scotland
- IBPSA Board Member, US
- Living Building Challenge Ambassador, US
- RIBA Awards Judging Panellist, UK
- Royal Academy of Engineering Fellow, UK
- RSA Student Design Awards Judging, UK
- Scottish Property Federation Policy Committee for Building Standards and Sustainability – representing BCO, Scotland
- SoPHE Technical Committee Member, UK
- Thai Green Building Institute, Thailand
- UK-GBC Trustee, UK
- Urban Green Board Member, US
- US-GBC, US

Education

Education is a critical driver of progress and opportunity in developing and developed countries alike. Our investment in learning is extensive: a number of key representatives at Atelier Ten teach and lecture at universities, an activity which is promoted and supported by the senior management team. In 2015, representatives have taught and lectured at the following institutions:

- Architectural Association School of Architecture, UK
- Academy of Art University, US
- Auburn University, Rural Studio, US
- Centre for Environmental Planning and Technology University, Ahmedabad, India
- Columbia University, Graduate School of Architecture Planning and Preservation (GSAPP), US
- Glasgow Caledonian University, Scotland
- Nanyang Polytechnic, Singapore
- New York City College of Technology, The City University of New York, US
- Roger Williams University, US
- Singapore University Technology and Design, Singapore
- University of the Arts, Central Saint Martins, London, UK
- University of Nottingham, UK
- University of Pennsylvania, US

Public forums, speaking engagements

Atelier Ten representatives have also promoted sustainable and environmental ideas as key speakers in 2015. The following represents some of the highlights:

- AIA Convention, Atlanta, GA, US
- ASHRAE Annual Conference, Atlanta, GA, US
- ASHRAE Winter Conference, Chicago, IL, US
- Accenture IOT, Singapore
- British Council for Offices (BCO), Fire Engineering, Scotland
- Building Energy Exchange, New York, NY, US
- CIBSE Seminar Series, London, UK
- CTBUH International Conference, New York, NY, US
- Dementia Services Development Centre, Scotland
- Enterprise Community Partners, New York, NY, US
- Façades+ Los Angeles, San Francisco, CA, US
- Façades+ Miami, Miami, FL
- Getting to Zero National Forum, Washington, DC, US
- Glasgow Caledonian University, Scotland
- Greenbuild, Washington, DC, US
- LIGHTFAIR International, New York, NY, US
- Living Product Expo, Pittsburgh, PA, US
- National AUDE Conference University of Stirling, Scotland
- NESEA BuildingEnergy, Boston, MA, US
- Positive Energy + Water Conference, San Francisco, CA, US
- The Coalition for Adequate School Housing Annual Conference on School Facilities, Sacramento, CA, US
- Urban Green Council - Monthly Program, New York, NY, US
- Zero Carbon Hub, Scotland

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