Preface

The issue of sustainable development, using our planet's resources, and the current approach and policies we have adopted over the past decades have far-reaching impact not only on the current generation but also on many future generations to come. The debate about a measured and well-planned set of global policies in developing our societies is no longer just at the heart of the forums of interested academic institutions and researchers but at the forefront of decision and policy maker's agenda across the globe.

While it is ironic that we still have those voices around that deny our history of deliberate and destructive impact on our environment over the past centuries, it is also refreshing that the weight of public opinion has forced significant changes in government behaviours across the world. Three weeks after we held the SEED conference here in Leeds, more than 150 world leaders attended the "UN Sustainable Development Summit" during 25–27 September 2015 at UN headquarters in New York to discuss the challenges faced by our planet, the fast disappearing natural resources, the unchecked and unplanned urbanisations and also to formally adopt an ambitious new sustainable development agenda for 2030. Calling it: "Transforming our world: the 2030 Agenda for Sustainable Development", the UN general assembly meeting clearly stated that the "*agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognize that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.*"

It is generally accepted that the built environment has a greater impact on natural resources and produces more waste than any other industry. However, beyond the green rhetoric, research is being applied on the ground to address the balance between the built and natural environment.

Industrious endeavours mean that the capability to harness and shape resources for our needs has never been so great, but with this comes the capability to exert considerable change to the surroundings we inhabit and, importantly an increasing responsibility to ensure the ecosystem that supports us is sustained. As we increase

in our requirements and impact on the planet extra care is required to ensure that the demands of today don't have a negative impact on the generations of tomorrow, and especially the aspect of the ecosystem that humans have come to enjoy. Through research and innovation, progress is balanced against the need to sustain the planet and key fundamental resources.

There is a growing concern with regard to how we balance the formed built environment against the natural environment, so that order in the ecosystem is sustained.

The SEEDS Conference

The aim of the International SEEDS Conference is to foster ideas, through research and proven practice, on how to reduce negative impacts on the environment while providing for the health of society. The professions and fields of research required to ensure buildings meet user demands and provide many diverse healthy enclosures are considered, endevouring towards a better understanding of the whole system. The SEEDS conference addresses the interdependence of people, the built and natural environments, and recognises the interdisciplinary and international themes required to assemble the knowledge required for positive change.

The conference brought together experts from all around the world to focus on the impact of the built environment, the changes that are taking place in the industry, and the benefits and consequences of change that are being predicted and measured. The focus of discussion and debate was on understanding how buildings and spaces are designed and nurtured to obtain the optimal outcome. Along with addressing technical issues, measuring energy efficiency and modelling energy performance, emphasis was placed on the health and well-being of the users of spaces occupied. This holistic approach has drawn together the research themes of energy, building performance and physics while placing health, well-being and ecology as the heart of the conference.

The SEEDS international conference brought together its members and partners to present work addressing some of the key topics. The conference had a necessarily wide agenda, considering all aspects of sustainability as they are presented and also had a considerable focus on the built environment. Selected papers are presented in this publication which covers some of the following key areas:

- Building and environment design
- Energy-efficient modelling, simulation and BIM
- Integrating urban and natural environment
- Building performance, analysis and evaluation
- Thermal comfort, air quality and overheating
- Green spaces, enclosures and buildings
- Green technologies and IT
- Renewable energy

- Energy flexible buildings
- Energy behaviour and lifestyle
- Dampness, water damage and flooding
- Building surveys, thermography, building pathology
- Water quality
- Air quality
- Planning and sculpturing positive change
- Reducing consumption and waste
- Sustainability, ethics and responsibility
- Occupant behavioural change
- Community building and master planning
- Health benefits of alternative and natural materials
- Urban heat island and mitigation
- Building resilience
- Sustainable cities
- Zero energy and energy plus buildings
- Local producers and urban environments, edible
- Trees and green city landscape
- Designing edible urban landscapes

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