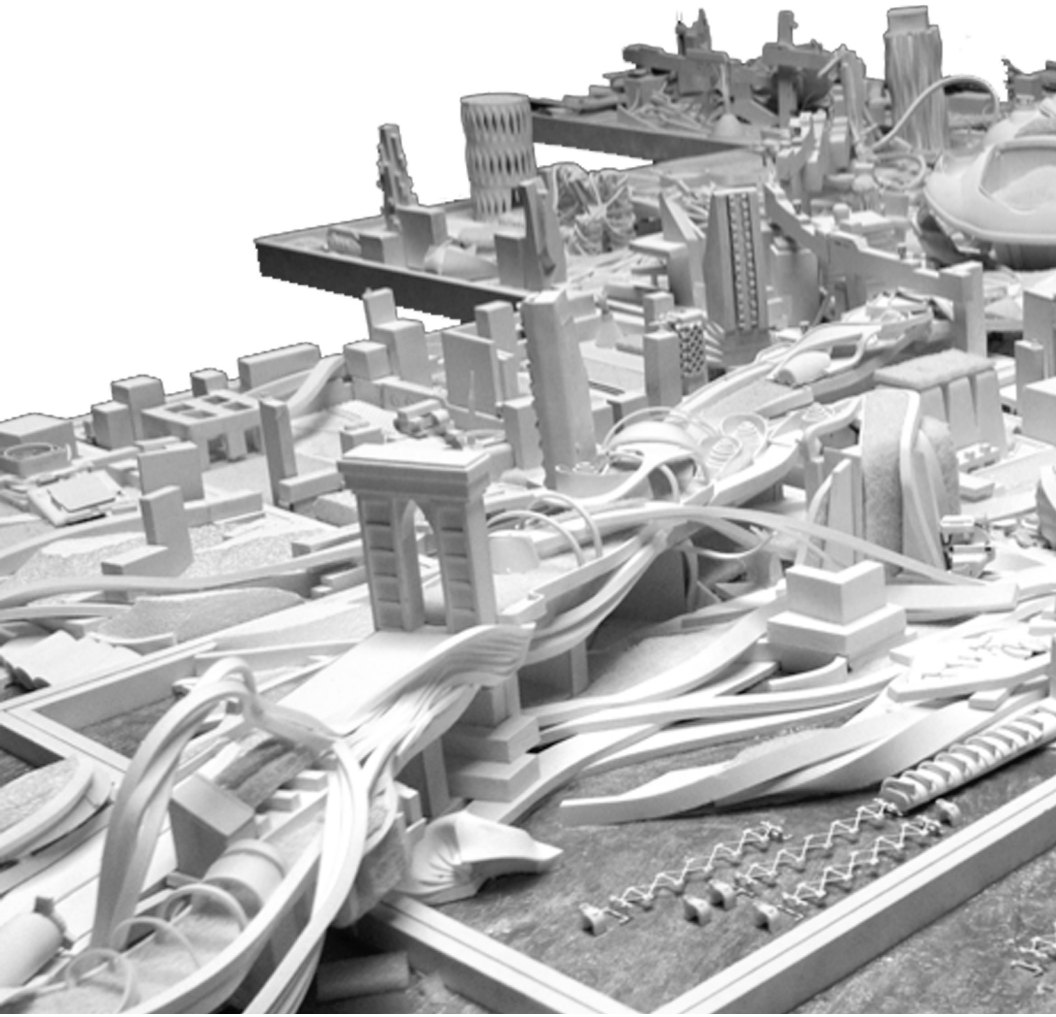
LIVING CITIES

Vision and Method for Regenerative Design

RESOURCE POSITIVE ARCHITECTURE | WATERLOO ARCHITECTURE



Resource Positive Architecture

WATERLOO ARCHITECTURE

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of individual buildings can afford the opportunity to optimize energy distribution within cities. Urban energy management can offer great economies of scale as well as energy load diversification across integrated energy loops. Creative use of proven technologies including cogeneration, energy storage and demand/load coupling can help us utilize waste heat for the betterment of the energy performance of our urban environments.

PREFACE

There is little dispute over the position that architecture must respond to the environmental crisis and pursue stewardship as a central theme in its theory and practice. At the same time, there is widespread skepticism that the present spate of accredited buildings actually represents the only or even the best way of achieving the goals of a carbon-neutral and environmentally responsible architecture.

Living Cities: Vision and Method provided an opportunity for architects and experts from other academic fields to discuss and debate alternate courses for the future of the North American city as it faces the need to achieve its post-carbon state. Most importantly, the conversation took place in a school of architecture, in front of graduate and undergraduate students who will be the ones most responsible for charting the course of architectural research and practice in the future. While the discussion is still divergent and complex, it will only be refined by exposure and persuasive argument. For this reason we owe a great debt of gratitude to the sponsors, organizers and participants in the Living Cities colloquium.

Rick Haldenby FRAIC
O'Donovan Director, Waterloo Architecture

The papers within this publication are drawn from the colloquium *Living Cities: Vision and Method,* held at the School of Architecture at Waterloo in Cambridge, Ontario, on January 20th and 21st, 2011. Waterloo Architecture presented the event in partnership with the Resource Positive Envelope Design group and Okanagan College, supported by the Asia-Pacific Partnership on Clean Development and Climate and by Environment Canada. The event was oriented towards urban designers, architects, technologists and members of the public interested in the future of sustainable built environments. International designers and critics presented lectures and workshops focusing on design of sustainable future cities. The colloquium examined experimental and visionary projections of future urban forms that pursue social and environmental viability.

THE CONNECTING THREAD

In a very short period of time, the Resource Positive Envelope Design (RPED) project has produced a wealth of activities and resources that have the potential to change the way we think about architecture.

The intent was not merely to design new kinds of buildings, communities and cities, but to design a new meaning for these structures that is predicated on a new relationship with the environment. To fully realize this goal would require a lifetime of work, but it begins with the comprehensive exploration of architecture that is presented here. This exploration occurred through technological research, visionary designs and experimental installations that were founded on ongoing discussions, a willingness to share and a spirit of cooperation.

It was precisely this spirit of cooperation that allowed the project to accomplish so much. Over the course of the project, the project team held two conferences, the Mini-Summit on the Future of Architecture and Living Cities: Vision and Method; participated in the Buildings and Appliances Task Force of the Asia-Pacific Partnership; organized a Green Building Exchange in Busan and Seoul, South Korea, and Shanghai, China, that included some of Canada's top architects and engineers; developed an extensive curriculum for sustainable construction management; carried out research in interactive and responsive design; built a detailed database of green buildings in a variety of countries; deployed networks of wireless sensors to measure building performance in Penticton, Canada, Busan, South Korea, and Tianjin, China; and conducted an international student competition with over 200 entries—all in the space of 12 months. Moreover, it is a measure of the cooperative spirit of the project that all participants in these activities have agreed to share their materials freely and openly through the project website at resourcepositive.com.

In addition, the project was able to forge key relationships with partners and organizations from around the world. For example, project funding was used to help

Roger Bayley travel to Tianjin and work with the Sino-Singapore Tianjin Eco-City project, where they are now planning a Canadian Centre for Sustainable Innovation. Discussions with Sun Central led to the deployment of an extensive series of light guides in Okanagan College's new Centre of Excellence in Sustainable Building Technologies and Renewable Energy Conservation as well as the participation of project researchers in the Core Sunlighting Solutions Research Network, which is part of the Canada-California Strategic Innovation Partnership. Project members were also invited to participate in the inaugural meeting of the Sustainable Building Network organized by the International Energy Agency in Paris, France. Closer to home, project members also helped to form the pan-Canadian College Sustainable Building Consortium.

Because the project generated such a tremendous amount of material, it has produced not one, but two publications. The first is *Explorations in Regenerative Design*, which documents the innovative research and design projects conducted by project members. The second is *Living Cities: Vision and Method*, which examines experimental and visionary projections of future urban forms. What ties these two publications is precisely the need to redefine the built environment. In both cases, this information is provided in digital form in order that it be freely and easily available to all.

The most powerful legacy of the project, however, may be the network of connections and partnerships that were built around the world.

Throughout the project we have had considerable moral, and financial, support from a variety of federal and provincial ministries and departments, for which we are very appreciative. Through their ongoing work with the Asia Pacific Partnership, Amanda Kramer and her team at Environment Canada provided the vision and impetus as well the major funding for the project. Elizabeth Tang and Glen Webb in particular at Canada Mortgage and Housing Corporation provided constant guidance and support as we built partnerships in other countries. Paul

Irwin and his team with the government of British Columbia were a major sponsor and supporter of our Green Building Exchange, which would have been impossible without their help as well as that of their representatives in the countries we visited. Here we would particularly like to thank K. S. Kim and Injun Paek in Korea, and John McDonald and Sylvia Sun in Shanghai.

All of the work carried out during the project was very much a collaboration of friends and colleagues. Once again I had the privilege of working with David Covo of McGill University and Philip Beesley of the University of Waterloo and I look forward to doing so again. Their insights and collaborative approach were essential to the success of this work. Similarly, Davis Marques of Ryerson University was indispensable to the technical aspects of the project. Brian Lee of MGH Consulting contributed his expertise in wireless sensors. Alan Maguire of George Brown College helped ground the project in the real world. Robert MacDonald was instrumental in building our web presence and this publication.

Finally, all those associated with the project owe their gratitude to the team at Okanagan College, who worked tirelessly to keep the project on track and on budget. As project manager, Michele McCready brought order out of chaos and she was ably assisted by Patti Boyd, Jennifer Heppner, Carla Whitten and Margaret Johnson. I would also like to thank Dean Yvonne Moritz, former Dean Dianne Crisp and Vice President of Education Andrew Hay for their support and patience for this project.

The issues raised by the Resource Positive Envelope Design project will not be solved overnight or by a single project, but the future of our planet depends on us addressing them now. In this sense, this project provided a critical first step in the right direction.

Douglas MacLeod
Associate Dean of Science, Technology and Health, Okanagan College