

Chapter 4

Connecting Urban and Rural Futures Through Rural Design

Dewey Thorbeck and John Troughton

Abstract Urbanisation has been accelerating around the globe as people move from rural areas to urban areas for economic advancement creating urban development that sprawls into the countryside, eliminating much of the best farmland surrounding cities. By 2050 there may be another 2.5 billion people on the planet with 100 million more in the United States and Australia’s population may increase by 13 million or more. Urban design and planning has attempted to shape urban development as cities have expanded, but it has done so primarily from an urban perspective. Areas of transition from rural to urban and land uses at the urban/rural edge in the peri-urban landscape require the lens of spatial arrangement from both urban and rural perspectives to shape, manage, and preserve the ecosystems that people depend upon.

Keywords Urbanization • Rural design • Urban development • Peri-urban landscape • Ecosystem

4.1 Introduction

Urban is defined as having the characteristics of a city, whereas rural is defined as a combination of natural and human landscapes – in reality they are both much more complex with integrated natural systems. Urban design and rural design are similar in that both embrace quality of life. However, rural design is fundamentally different in seeking to understand and embody the unique characteristics of open landscapes and ecosystems where buildings and towns are components of the landscape, rather than defining infrastructure and public space as in urban design (Thorbeck 2012).

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Connecting Urban and Rural Futures through Rural Design discusses how rural design and the problem-solving process of design and design thinking that can help resolve land-use issues in the peri-urban landscape and how the quality of life and the economies of people living and working in both rural and urban areas can be improved in the process?

Rural areas around the world are undergoing profound demographic, economic, cultural, and environmental change creating considerable challenges and stress for their residents and on the ecosystems upon which they depend for their livelihood and quality of life. Critical global issues such as climate change (that is currently having a large impact in Australia), renewable energy, water resource protection, food security, and healthy human development will dominate international and local rural policy for years to come as citizens and governments try to manage change. The peri-urban landscape is of particular concern because urban expansion has historically been done at low density requiring large amounts of land causing infrastructure and public services to be provided at great cost.

4.2 Rural Design

Rural design is an emerging design discipline that was started at the University of Minnesota in 1997 when Dewey Thorbeck founded the Center for Rural Design (CRD). Since that time the CRD has been involved in a wide range of rural projects that impact the quality of life in rural areas, primarily in the State of Minnesota. These projects and experiences working with rural citizens implied that the principles of rural design could be applied anywhere and were documented in Thorbeck's book *Rural Design: A New Design Discipline* (Thorbeck 2012). The book is now being translated and published in China by PHEI.

Rural design is the design discipline that brings design thinking and the problem-solving process of design to rural issues at both the macro and micro levels while making connections between urban and rural futures. Rural design is a way to understand the dynamic behaviour of natural and human systems, and to unify and conceptualise the complex and dynamic reality of sustainability in integrating humans, animals, and the environment in both rural and peri-urban areas. We are living in a time of rapid change and rural design is needed to make connections between urban and rural futures at the urban/rural edge, and in the process it can help minimize the negative impacts of change while increasing the positive impacts with economic resiliency, social interaction, and appreciation for diversity in art and culture (Fig. 4.1).

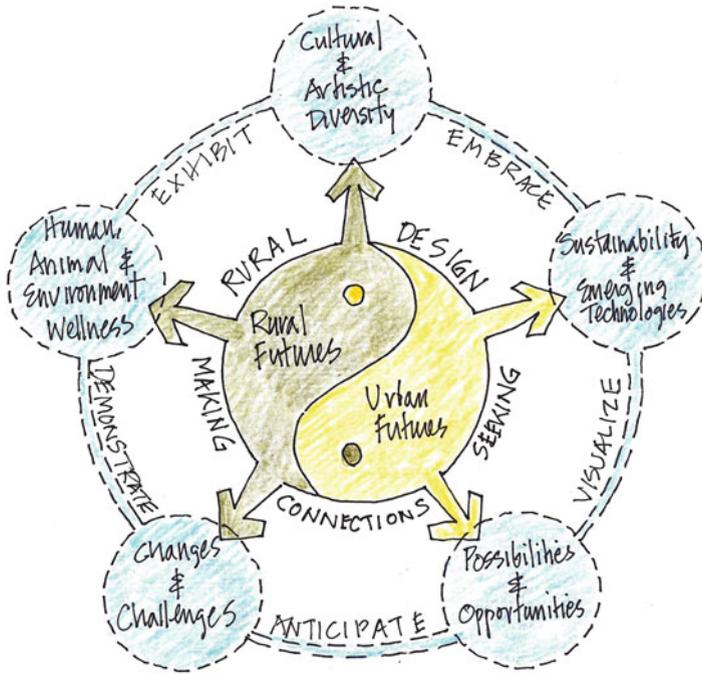


Fig. 4.1 Rural design is a connector of urban and rural futures

4.3 Rural Design for Urban Agriculture

Urban agriculture is gaining strong worldwide support to integrate agriculture into urban landscapes. It has a long history emanating from the Garden Cities movement in the nineteenth century and has evolved today into a new vision for the role of agriculture in urban contexts to enhance quality of life by retaining the land’s capability to contribute to sustainable societies and cultures. Urban agriculture is an emerging design opportunity to think about and shape common open space to provide for food security, water resources and maximize the value of open landscapes in urban expansion. However, most of the design ideas focusing on urban agriculture that have recently emerged illustrate a very narrow point of view as architecture that incorporates plants in an urban setting. Urban agriculture is more profound and inclusive requiring a perspective of both urban and rural design. It is that connection between the high density city core and the rural landscape, defined as a transect, that needs to be rethought to fit twenty-first century living. A proposed project that the CRD is working on in Minnesota will look at that issue to redefine the connections between urban, per-urban, and rural (Fig. 4.2).

The design process used for this study (involving the University of Minnesota’s CRD and Metropolitan Design Center, and planning staff from Dakota County) will provide policymakers a wide range of options as how to shape urban and rural

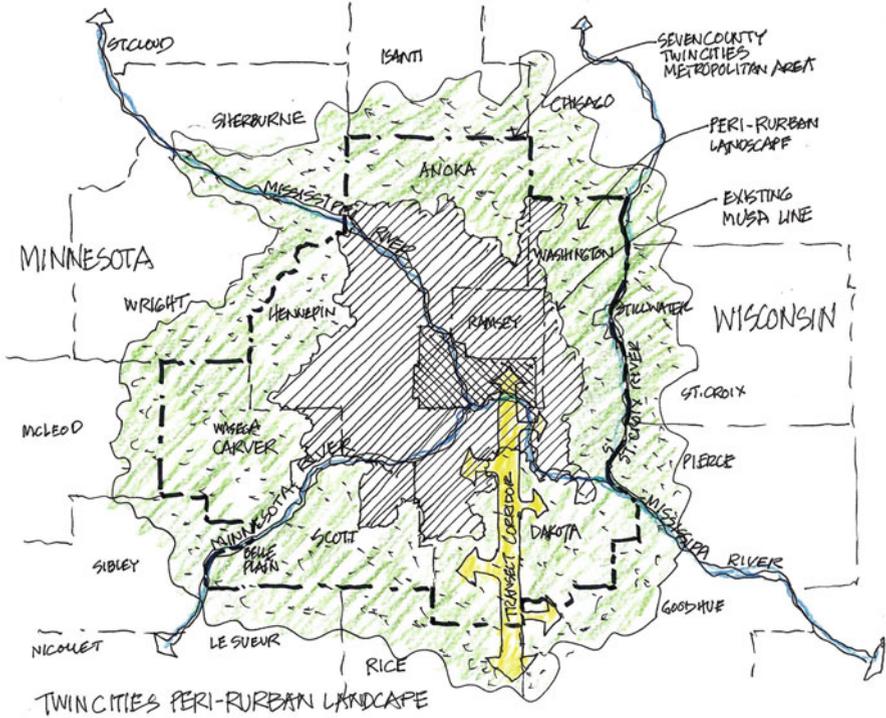


Fig. 4.2 Twin cities metropolitan region and its peri-urban landscape and the planning transect

landscapes to increase water resources, provide for food production, protect natural amenities, and identify development rules that will enhance sustainability, provide housing and public infrastructure at lower long-term cost while improving quality of life.

This idea was first discussed in a paper about urban development with a creative commons. The creative commons is local open space that facilitates neighbourhood development and social progress through inclusivity, creativity and entrepreneurship (Troughton and Walsh 2011). The paper argues that the creative commons can become a dynamic substrate for urban agriculture by challenging how food and plant production, and associated activities, can be programmed and managed in many ways for generations to come. It can create a source of plant and food knowledge available to everyone, but above all it becomes a community asset. This can be shown as the design approach and as an actual plan (Figs. 4.3 and 4.4).

Rural design provides a methodology to shape rural and urban landscapes before climate change and concerns for food production and security and water resources become critical for a rapidly expanding world population. Using community engagement, design-thinking, and the lens of spatial arrangement in shaping the human and natural landscapes, rural design can incorporate agriculture into existing cities and along the urban/rural edge for food as well as opportunities for recreation,

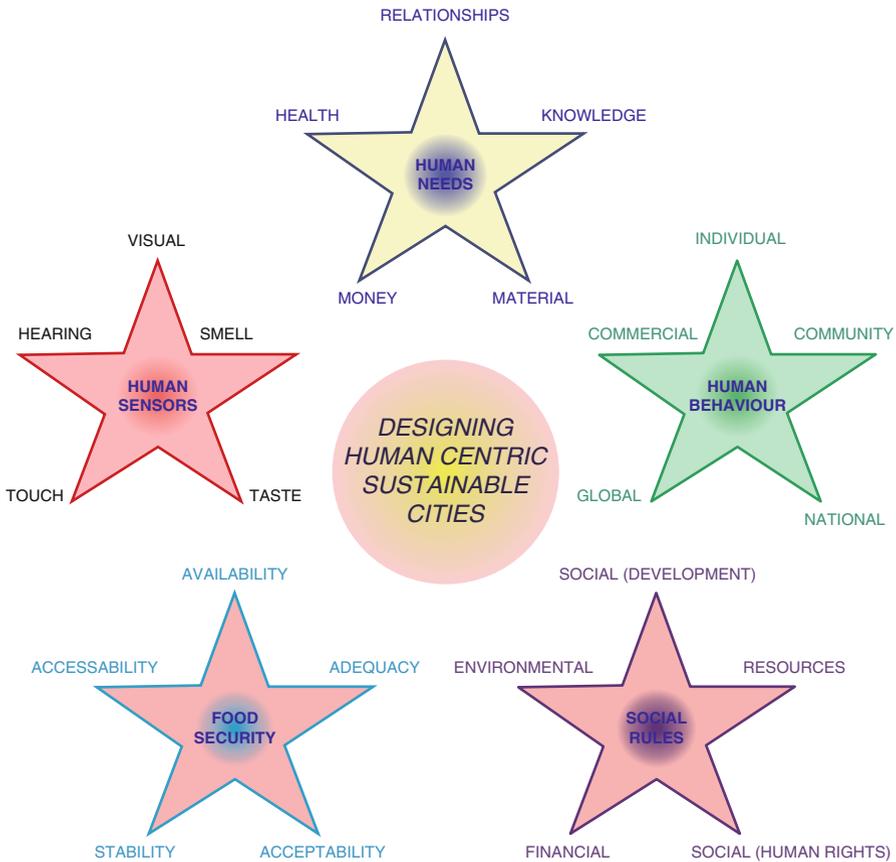


Fig. 4.3 Illustrating the design approach

economic development, and environmental understanding. Rural design is a process to nurture collaboration and cooperation amongst rural and urban communities to shape the landscape to make connections and provide an integrated system of human communities, plants and animal production that meets the needs of people, the economy, and the environment in the present without compromising for the future. This is particularly true at the urban/rural edge and the peri-urban landscape (Fig. 4.5).

Design thinking and the problem-solving process of design is a strategic resource and source of creativity, innovation, and entrepreneurship to find ways that limited land and water resources in peri-urban landscapes can be better shaped and utilised. They are a process that can be taught and utilised by human communities to analyse issues, seek solutions, and select a preferred pathway to a better future that does not necessarily require design professionals to generate the solution. Rural design is not a science, but a methodology for holistically crossing borders and connecting issues to nurture new design thinking and collaborative problem solving. It recognises that

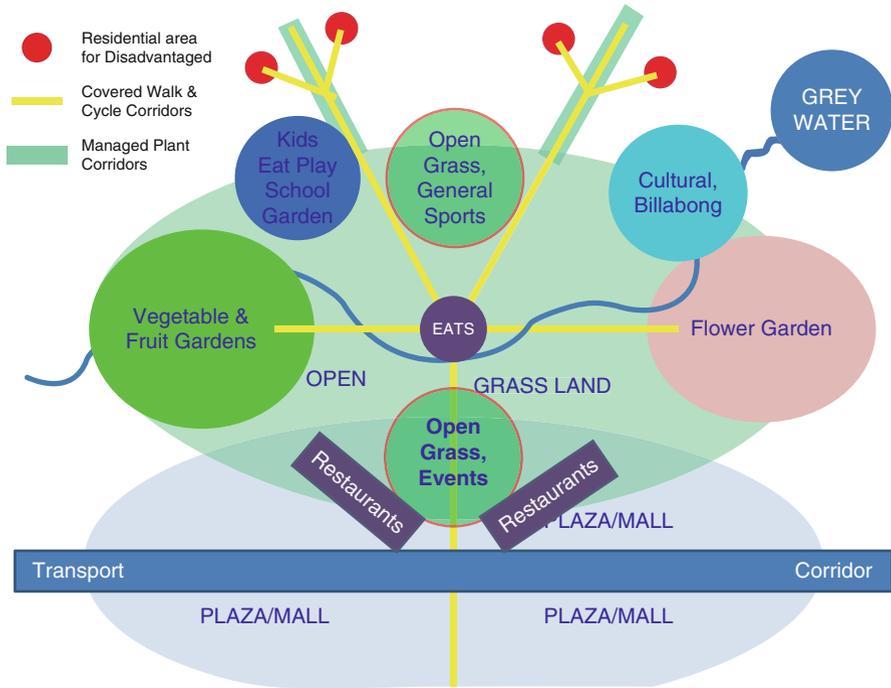


Fig. 4.4 Illustrating an actual plan

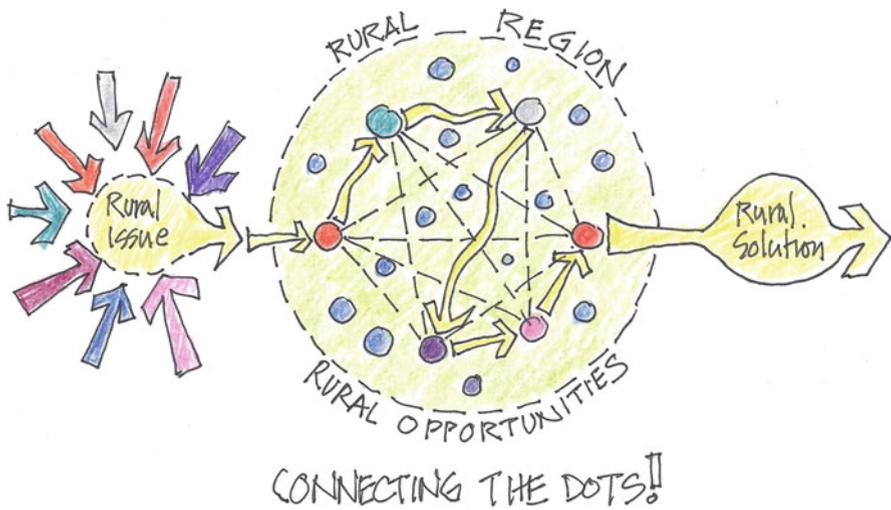


Fig. 4.5 Rural design crosses borders and connects the dots

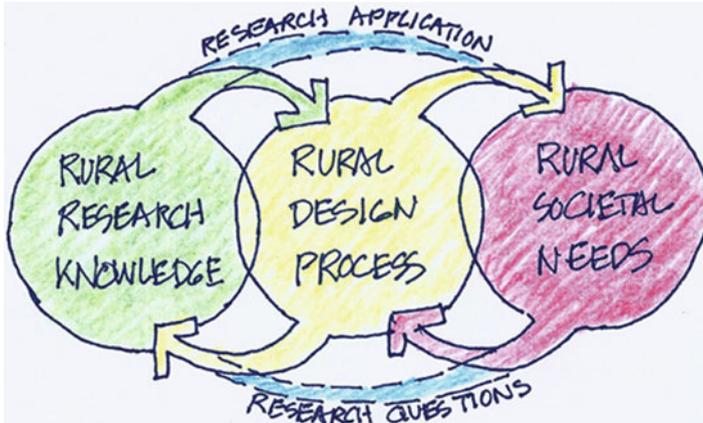


Fig. 4.6 Rural design linking science to society

human and natural systems are inextricably coupled and engaged in continuous cycles of mutual influence and response. As a process rural design brings science to society and in doing so it can identify new research questions (Fig. 4.6).

The 2014 International Conference on Peri-Urban Landscapes: Water, Food and Environmental Security was an exciting opportunity to dialogue about connections and how science and society can more fully interact for social, economic, and environmental sustainability. The authors of this book chapter believe that the Second International Symposium on Rural Design being planned to be held in Australia in the near future (the first was held at the University of Minnesota in January 2010) can be an important follow-up to provide a strong evidence-based argument for political and policy changes impacting urban expansion at national, state, regional, and local levels in Australia and worldwide.

Rural Design can integrate knowledge across disciplines, and while not directly engaged in research, rural designers can translate and apply research knowledge to the design process, helping bridge the gap between science and society, while improving the social, economic, and environmental conditions of human communities on Earth, as articulated by this diagram of the rural design process (Fig. 4.7).

4.4 Case Studies of Rural Design

The following are two case study examples of where rural design thinking and the architecture expressing that thinking illustrate new approaches to linking urban design and rural design together while crossing borders. They reflect a desire to connect urban and rural design to provide a product for the market with an architecture that relates to place and climate – embracing the concept of one healthy planet that integrates through design human, animal, and environmental wellness – as a way to understand and appreciate the importance of connecting all life on Earth.

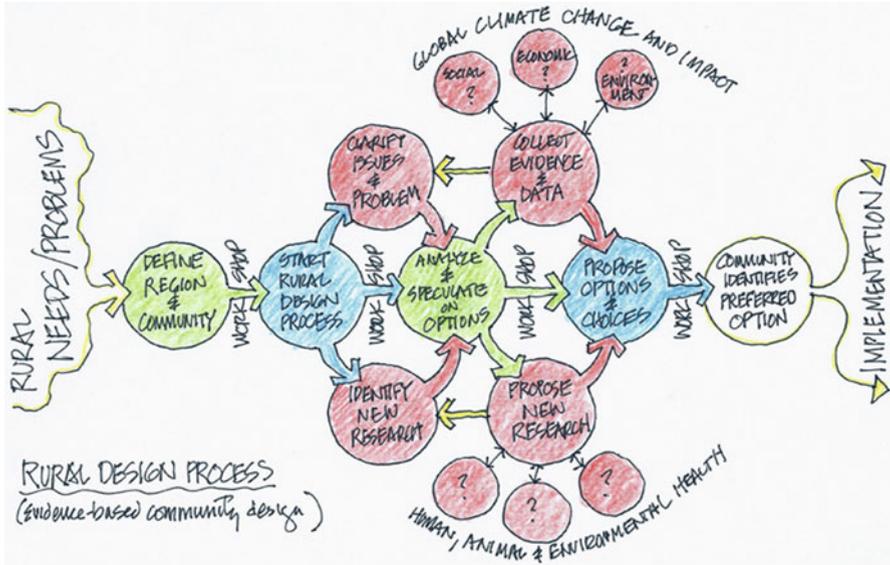


Fig. 4.7 Rural design process

The first project (Fig. 4.8) is a woolshed designed by Australian architect Peter Stutchbury. The Deepwater Woolshed was designed and constructed for the New South Wales landscape and designed around the functional flow of humans and sheep with an adaptable structure that can adjust to change with a structure of appropriate durability. The award winning building has a beautiful design that will protect it from the winds and is cooled by water during extreme heat. It is one of the rare examples of good architects working in the rural landscape on agricultural buildings that illustrate a rural point of view rather than an urban point of view as typically done.

The second project is a large installation of glass greenhouses in the peri-urban landscape of New Zealand (Fig. 4.9) for more effective minimization of environmental risks, while improving plant and labor productivity. The project is a good example (of a project that has been constructed rather than a project that is proposed) of functional and cost effective urban agriculture that is being utilised more and more in the peri-urban landscape around cities worldwide. The modern CO₂ enriched glasshouse maximises the use of non-productive land, increases the production per unit of land area by as much as ten times and dramatically increases the efficiency of water and fertilisers. Also, it is an architecture that can be recycled.

Development like this may change the face of food security for ever and the technology will spill over into urban and city farms with the ability to use any urban nook and cranny to make existing cities green and produce food for its citizens.



Fig. 4.8 Deepwater woolshed in New South Wales, Australia



Fig. 4.9 Glass greenhouse in the peri-urban landscape of New Zealand

4.5 Concluding Remarks

There are very few existing studies of the complex food systems that provide food products to cities and the impact on the environment that those food systems impact. Those cities along the sea coasts may be the most vulnerable because of rising sea levels due to climate change. The real question is how can urban populations worldwide make plans for effective and reliable food sources without some form of urban/rural partnerships?

The answer will require the involvement of private sector businesses engaged in agricultural, food, forestry, energy and water to work with the public sector at local, regional, national, and international levels incorporating long-term resilience with development goals. Food and nutrition security is jeopardised by climate change, limited water resources, and the relative lack of accessibility that the increasing global population has to secure safe food and nutrition (Foster and Gets Escudero 2014). This important study identified a critical concern for balancing production and consumption making it clear that urban and rural populations must work together for mutual benefit.

Design thinking is a problem-solving process and a methodology to bring the evidence of science to help resolve urban, rural, and peri-urban societal needs. Research issues are by nature interdisciplinary and require a dialogue between citizens and the academy for scholars to understand the issues and respond with research and effective solutions. The research, however, must recognise that human and natural systems are inextricably linked and engaged in continuous cycles of mutual influence and response and this requires an understanding of both urban and rural to fully respond to global issues of potable water supplies, energy and food supplies, and the ecosystems services that human and animal communities depend upon.

Urban design and rural design have many similarities in that both embrace those unique characteristics in design thinking that acknowledges social and cultural values to enhance quality of life. Urban design has been taught in university design schools for some time, but rural design is an emerging new design discipline that needs to be developed in higher education around the world.

Rural design and urban design are design methodologies to address peri-urban issues and resolve peri-urban needs. To be effective and relevant for this task, the methodology must be founded on solid research, and its practice must be based on validated data that will result in transformational changes. Using the lens of spatial arrangement in shaping landscapes and methods of community engagement, rural design helps citizens manage change and in the process it can help organise peri-urban landscapes and rural regions for recreational, agricultural, cultural, economic, and ecological purposes to enhance quality of life – urban and rural.

Rural design, when applied with research evidence connected to peri-urban place, provides:

- Design thinking information to policy makers of the spatial, ecological, and ethical impact of various alternatives and the choices they make;
- A methodology to resolve land-use issues at a variety of scales, including climate change and water management, and crossing borders while encouraging collaboration and cooperation;
- A process for geographic information systems and other communication technologies to enhance urban and rural citizen knowledge to enhance economic development and business opportunities;
- A community-based design process to empower citizens in shaping their futures;
- An opportunity to bring new technologies to create synergism and entrepreneurship through systemic and holistic linkages and connections;

- An understanding of regional quality of life and unique sense of place in the peri-urban, urban, and rural landscapes;
- A way to understand, connect and resolve rural and urban land-use issues worldwide for a better and prosperous quality of life for people, animals, and the environment.

We are living in a time of rapid change and the problem-solving process of design is needed to make connections between urban and rural futures at the urban/rural edge, and in doing so it can minimize the negative impacts of change while increasing the positive impacts with economic resiliency, social interaction, and appreciation for diversity in culture and arts. Urbanisation and the sprawl into the rural landscape is also increasing people's contact with the natural environment creating concerns for new forms of zoonotic disease transmission from animals to humans that could greatly impact civilization. A sustainable future will require cooperation and collaboration between the private sector in the flow of goods and services and the public sector in defining land uses and infrastructure systems. This will require high level leadership from involved men and women to break down barriers and cross borders to find optimal solutions for the benefit of both urban and rural populations.

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References

- Foster T, Gets Escudero A (2014) Landscapes for people, food, and nature. World Bank, Washington, DC
- Thorbeck D (2012) Rural design: a new design discipline. Routledge, New York
- Troughton JH, Walsh S (2011) International urban design conference: resilience in urban design. Internal Publication