Disruption, Divergence and Designed Intervention - Making Change Happen
Facilitating collaborative city making through the design of interactive urban interventions

"This presentation will discuss how we can facilitate collaborative city making through the design of interactive urban interventions. Developments in interaction design have much to offer the design of our built environments, allowing them to become more responsive to our needs. In addition to improving the relationship between a user and their environment, interaction design can also improve the social relationship between the citizens themselves. Thus we can use interaction design to encourage a more participatory and collaborative approach to urban design.

To demonstrate how, I will present two temporary urban interventions recently implemented in London with University College London and Transport for London, including a 'musical' bus-stop and an interactive Soundmap. I will discuss their respective urban objectives, including the promotion of public transport usage as well as the need to reclaim our streets, before discussing how these aims were achieved through the use of interaction design techniques. In particular, I will focus on the use of sound as a tool which not only speaks to the people, but connects them with each other.

However, not all urban interventions need be high-tech in order to make an impact, particularly in contexts without the necessary economic means and know-how. Thus, I will also discuss several low-tech urban interventions implemented in developing cities in South America. The overall objective of a more interactive approach to city making, whether facilitated by high or low tech techniques, is the development of more equitable and liveable cities.
Mrs Stella Agagiotis
Coordinator Strategic Planning, Randwick City Council

Co-authors:
Ms Gigi Lombardi, Landscape Architect, Randwick City Council

K2K: Integrating Infrastructure Delivery with Urban Planning

How can urban renewal be managed by integrating transport infrastructure with planning to create well-designed, sustainable and liveable places?

Kensington and Kingsford town centres in Eastern Sydney are undergoing transition with the introduction of the Sydney CBD to South East Light Rail. The new infrastructure will directly impact on the centres’ identity, functionality and accessibility and has been a catalyst for considerable redevelopment pressure.

Randwick City Council has undertaken an innovative approach to guiding change within the town centres by implementing a 15 year program comprising short, medium and long term planning and urban design interventions.

In the short term Council developed the Light Rail Urban Design Guidelines to provide an overarching framework for place making and public domain improvements alongside the delivery of the light rail infrastructure. Medium term interventions have been planned in accordance with a Light Rail Support Plan Package including new plazas, parking reconfiguration and traffic calming works to offset the loss of on-street parking along the main transport corridor.

To address the town centres’ longer term planning needs, a strategic vision was established through an International Urban Design Competition which recently won the Greater Sydney Commission’s inaugural award in 2017 for “A Great Plan”. The competition called for fresh ideas to support the sustainable growth and rejuvenation of the town centres through high quality urban design.

The subsequent draft K2K Planning Strategy sets out the implementation actions to guide long term changes to land use, built form and the public domain. The Strategy contains measures to enhance the liveability, sustainability and economic prosperity of both town centres with a focus on design excellence and innovation.

Council’s bold planning and collaborative process has established a best practice approach to integrating infrastructure delivery with urban planning to create well-designed and liveable places.
Wahat Al Karama: The Oasis of Dignity

Wahat Al Karama, The Oasis of Dignity, in Abu Dhabi, treads a delicate balance between traditional memorial and place destination. Its role is far more complex than any monument may suggest. As a tapestry of interwoven meanings, symbols, emotions, memories and narratives, it is ultimately the creation of a new urban place to demonstrate unity in a highly disrupted society.

From nomadic Bedouin to modern metropolis, Abu Dhabi was a small fishing and pearling village until the influx of petrodollars. Its evolution from desert oasis to modern metropolis is fueled by significant nation building highlighting a place of contrasts where Sheiks take selfies and Westerners smoke shisha. Abu Dhabi, where the traditional culture is firmly rooted in Arabia’s Islamic traditions is also home to a massive population of expat workers now comprising nearly 85% of the inhabitants.

Cognisant of the contrasting urban fabric of a city in flux, Wahat Al Karama is presented as a conceptual metaphor as a place for reflection that is an attraction, place attachment and place identity. Commissioned by the Crown Prince, the memorial park covers 46,000 square meters symbolically located opposite the Sheik Zayed Grand Mosque. It contains a central plaza with a reflection pool that is emptied when hosting commemorative events of up to 1,200 people. The dominant centrepiece is the monument, designed by British Artist Idris Khan. Comprised of 31 cast-aluminium tablets, the largest standing 23 metres in height, the tablets cascade and lean on each other to represent unified strength, power and pride among soldiers, loved ones and their country. With its impressive scale, the Wahat Al Karama represents the eternal martyr, a place of reassurance and defiance.

The presentation will follow the project from vision to reality, exploring the meaning of memorials, the translation of the term of martyr, and the creation of a new destination in a highly changeable Middle East.
Thornton by Design

An explanation of how the heritage, drainage and other constraints informed the “Urban Design” of Thornton at North Penrith, NSW to create character and place ... a memorable and enduring “heritage of tomorrow”.

Introduction
Thornton was previously a large expanse of defence land on the north side of the Penrith Railway Station. It is now approaching completion as a major new “Transit-Oriented Development” by NSW Landcom / Urban Growth NSW. Most detached and medium-density dwellings have been completed and sold. Higher density apartments and core retail and commercial are under construction.

Constraints
The development of the site was constrained by a number of heritage issues, by proximity to and access to the railway station, by a large at grade commuter carpark and by a number of drainage issues (including detention, water quality etc).

These issues were addressed and actually “informed” the urban design in a very positive manner which is delivering a unique and characterful “placemaking” design.

Heritage
The following heritage issues contributed to the precincts urban design and character
- Cricket oval site of “test” match with Lord Sheffield’s (WG Grace) English team in 1892
- This has been reformed, upgraded and installed as ceremonial place and open space for community.
- An early fitness circuit constructed around the oval was attracting users before any residences were occupied.
- Site of first Hot Air Balloon flight (1892) and first Australian, manned, winged flight (1911). This land was the site of the first Australian flight by William Hart in 1911.
- Speedway.
- The site was used as a “speedway” in the immediate pre-war period.
- The layout of the track has actually informed the Thornton road design. A proposal for a different paving design and heritage explanation was not proceeded with.
- Thornton Hall.
- This historic house (circa 1882) sits on the hill overlooking the site.
- Views and vistas to the house were protected from vantage points and a generous curtilage provided.
Proximity to Railway Station
The Penrith Station provides Transit-Oriented Access to the site. The “Urban Design” celebrates this arrival with a public square which also serves as a public gathering place and a transit interchange. Substantial density is being developed to emphasise this TOD approach.

Commuter Parking
A very expansive and substantial at-grade commuter carpark which could have reduced the TOD significance has been substantially reduced in footprint and combined with a retail parking structure. Further reduction in footprint and transfer to structure will occur with final buildout. The location and structuring of commuter carpark feeds proposed new retail shops (including supermarket) on the way to and from Transit and does not in any way impede TOD.

Drainage Issues
A number of drainage factors were raised including detention of stormwater and water quality treatment before connection with nearby Nepean River. The proposal has created an urban water feature which runs through the site starting as a small decorative waterway at the western end of the oval near the community centre and then turning into a major formal urban detention basin, water treatment pond and decorative lake which will “cool” the adjacent environment and provide views and outlook for surrounding density residential. This will be a most desirable feature in the very hot Penrith summers.

Conclusions
The way that these issues have informed the Urban Design have given rise to a very characterful place which is Thornton ... a memorable and enduring place already appearing as the site develops.
Ms Evy Anwar  
Urban Designer, Northern Beaches Council

**Place Planning: collaboration in the process of creating a vision and delivering an outcome**

**Highlights of presentation:**

- Place planning process focuses on the creation and evolution of places rather than a traditional land use-based structure planning.
- Place planning process led by a division called ‘Place Management’ which oversees the mechanism and synergy of places.
- A series of programs were created as part of community engagement and education about creative placemaking, how to address future challenges, and being involved in the creation of a liveable community.

**Aims:**

- To promote a more inclusive way of planning future places
- To appeal to a wider section of audiences in the new trends of creating and building towards liveable communities
- To capitalise new infrastructure investments such as better public transport (the B-Line)
- To create more people friendly places rather than a ‘car-oriented’ destination

**Methods:**

- Centre based planning for efficient use of resources and planning growth in a sustainable way.
- Extensive community engagement programs: discussions involving local and international experts, workshops, walking tours, placemaking events, etc
- Evidence-based analysis using urban infometric and traffic modelling to focus on creating better people spaces
- A variety of temporary intervention was incorporated as part of the place planning process to disrupt the usual approach in interpreting and using public spaces.

**Relevance:**

- Place plan scenario includes behavioural and gradual lifestyle changes as well as the exploration of new ways in conducting day to day activities.
- For urban areas, such as town centres, the role of public domain is very important to foster social activity and community belonging. Small changes can have a big impact if in-line with the community vision.

**Results:**

- Deeper understanding about what is required for developing better places. Notwithstanding some people may still have difficulties to accept the ‘trade-off’ required to improve the quality of spaces.
Conclusion of the work:

- Significant public domain (including street) transformation require long term planning and major investments. Staging and gradual changes with temporary interventions can be more palatable for communities which uphold a certain lifestyle.
- Public domain investment can affect long term planning viability. A combination of a wholistic strategy, a clear vision and stronger direction from the government is crucial on
**New Town V Urban Regeneration. An Exploration of the Benefits and Opportunity Cost of an External High Speed Rail Station for Albury Wodonga**

This presentation will demonstrate, through urban design, the benefits of locating the high speed rail (HSR) station within the existing urban core of Albury Wodonga instead of the government’s (phase 2 report) preferred option of an external station 25km out of town.

My presentation will use the work of my Urban Design Master’s thesis work.

HSR is not a new concept for Australia, it has been around for many decades but continues to remain relevant. Recently the debate has focused on the ability for HSR to create growth in our regions and alleviate pressure on housing prices.

Broadly speaking the HSR alignment is set, an inland Melbourne to Sydney to Brisbane corridor with a Canberra spur. However the exact location for the station in Albury Wodonga does not have consensus agreement. Various government and industry/academic reports have produced a wide variety of location options. Albury Wodonga’s particular constraints are unique; with topography, tight curves, existing issues of severance and a history of decentralisation (Whitlam years) all impacting the regions ability to facilitate HSR.

My work took an approach of equals. Examining the needs required for an internal and external station to succeed. I then took each built environment component and redesigned them back into each option in order to explore an opportunity cost. I had the opportunity to speak with industry experts and politicians as I pieced together all the various elements and their interviews will form part of the presentation.

This talk touches on a number of the conferences topics. City making and disruption, Population growth, densification, renewal, innovation and urban regeneration, Urban Design Policy, The future of work, urban impact, Transport and traffic, Satellite cities, Planning, functional design.
"Why as a competent Architect/Planner would you involve local residents in the planning and design, let alone the building, of a future project?" The answer may seem obvious to some but is commonly misunderstood or neglected.

A glib answer often heard is "well if people are involved then they will respect the outcome more and look after it". But there are so many unknowns in this! What constitutes being "involved"? The work we have been delivering over the last 20 years has used a methodology wherein people who are directly impacted by the development become "partners in development" but in addition many stakeholders are embraced in order to contribute to the development process thereby ensuring a broad portfolio of ideas, needs, feedback and opportunities are considered. Of particular importance in this is the communication loop that is developed and managed with all contributors and stakeholders. The methodology is termed by us as a "Multi-faceted Approach to the Project Development Process".

It is similar to a project development and implementation process described as:

**Integral Development:** The word integral means comprehensive, inclusive, non-marginalizing, embracing. Integral approaches to any field attempt to be exactly that: to include as many perspectives, styles, and methodologies as possible within a coherent view of the topic. In a certain sense, integral approaches are "meta-paradigms," or ways to draw together an already existing number of separate paradigms into an interrelated network of approaches that are mutually enriching ~ Ken Wilber

The Multi-faceted Approach is defined and described in detail in this paper outlining its relevance to all projects no matter who the client might be and where the project might be located and using a recent project in Doomadgee, North Queensland as a case study, outlining the challenges and pitfalls experienced during the project development process.
Design Smart: Achieving High Quality Design through Collaborative Processes

As Brisbane grows as a New World City, the aim is to achieve a responsive subtropical design that speaks on behalf of the city - design that demonstrates the best elements of living in Subtropical Brisbane.

Brisbane needs exemplary projects that respond to an embrace our subtropical climate and showcase our city's urban character and outdoor lifestyle. To achieve this strategic goal Brisbane City Council has created a new initiative that seeks ways to partner with the development industry and key stakeholders.

The Design SMART service is intended to be a pre-lodgement service from the initiation/inception phase of significant development projects. Council officers attend multiple pre-lodgment meetings and work with applicants to review the design opportunities and constraints of a site and to discuss how these might inform the development of the concept design for the site.

There are two key of differences in this process that set apart Brisbane's approach to other cities. The first is the high level policy guidance provided by the recently adopted document, 'New World City Design Guide: Buildings that Breathe'. This forward thinking guide illustrates how residential and commercial buildings in the city centre, mixed use inner city, transport corridors and principal regional activity centres should be designed to respond to our subtropical climate and improve sustainability. This gives clarity to the industry on the expected three dimensional built outcomes for the city.

The second is the direct involvement from the initial stages of the city's Independent Design Advisory Panel (IDAP). This panel provides Council with independent advice on design, quality, sustainability and appropriateness of strategies and projects of importance to Brisbane’s future growth. In this way, Design SMART facilitates direct feedback from industry-based professionals, real world advice, to developers from early stages of the design process.
Cities have traditionally drawn a significant proportion of their fresh food supplies from a hinterland of 50-100kms. Increasing use of international supply chains has reduced this reliance on relatively local food supplies at the same time as the accommodation of urban population growth has seen the residential redevelopment of agricultural land on the urban fringes. At the same time, we are purchasing an increasing proportion of our food, fresh and otherwise, from the two main supermarket chains. So, while Australia produces and exports a surplus of food, the majority of us who live in cities are dependent on global supply chains for our food.

These supply chains are remarkably resilient but nonetheless vulnerable to disruption by market forces, military conflicts and extreme weather events that are becoming more frequent and severe in a changing climate. In order to strengthen their resilience and food security, many cities are now planning to enable greater local food production within cities and by protecting agricultural land on their fringe. This presentation critically reviews emerging approaches to planning for greater food security in North American and European countries and explores their relevance and transferability to Australian cities.
Dr Louisa Carter  
Queensland City Executive, Arcadis

**MODex 2.0 - A Solution for Next Generation City Mobility**

The speed and scale of change in Australian cities presents major challenges. The cities that effectively manage these through increasing urban development will see strong economic growth. Successful development of urban transportation and creation of high quality multi-modal hubs could be the difference between those cities that thrive in the future and those that do not.

Improved transportation brings value; however, this must reach further than the journey itself and improve the quality of life for those who live in the surrounding area. Stations and airports are no longer simply places where travellers arrive and depart, the facilities in and around it increasingly makes the hub a destination in itself. Improvements on existing, or development of new, transit-hubs cannot be developed in isolation, they must be integral to the area they serve, which in turn has a ripple effect on the local economy and positive impact on future investment.

Arcadis and CallisonRTKL’s Mobility Oriented Development (MODe) concept addresses how higher value outcomes can be achieved through early and integrated planning and development. The analytical tool established to measure transit-hubs on the MODe scale - MODex - allows Arcadis to determine the areas where a station or airport can be enhanced, be that related to accessibility and comfort, the urban environment, social place-making, or economic development.

However, with ever-changing socio-environmental and economic landscapes across Australia’s urban centres, developers and investors need a clear framework for urban development and regeneration projects, providing predictability and certainty to make investments. The upgraded MODex 2.0 analysis tool provides a more detailed and robust analysis of global transit hubs to help achieve sustainable, prosperity-driven and people-focussed outcomes. Sharing examples from around the world, we’ll review wherein the MODex 2.0 analysis can be applied to unlock the potential to improve the quality of life.
**Restart the Heart: Urban Surgery to Save City life**

**Issue:**
The Square or Te Marae O Hine (the courtyard of the daughter of peace) in Palmerston North, NZ (Pop 85,000) is a 17 ha open space physically located at the heart of the city, closely held in the hearts and minds of residents and those who visit. Central to early city life, the Square was where visitors arrived by train, commerce occurred and public events were held. As the city grew and transportation and retail models changed a weakening of the city heart occurred that by the early 2000's little city life within the Square remained.

**Key causes:**
- Increased vehicle ownership,
- Relocation of rail line to edge of the city,
- City sprawl
- Large format retailing,
- High concealment, difficult egress and poor quality of assets,
- Space claim by groups - sense of fear and criminal activity,

**Intervention:**
In 2004 Palmerston North City Council set about a series of catalytic design and strategy steps in an attempt to reclaim The Square, restart the city heart, and allow visible public life to once again flourish:

**Key moves:**
- City Heart Project - The Square 2004
  Applied CPTED principles as key redevelopment driver.
- Urban Design Strategy 2010
  8 Key initiatives to lift the quality of urban design across the city, in particular:
  Apply a centres based approach to city development,
  Embed urban design criteria into the District Plan, in particular in the Business Zone,
  'Placemaking' encourage community led solutions to public realm occupation

**Result:**
- Improved sight lines, access and movement,
- Increased high quality, usable space for people,
- A safe destination a massive reduction in crime,
- Increased official city events and place activation,
- Increased visible public life,
• Community led events and activation,
• Launch of 'Palmy Unleashed' with design power shifting to community groups and PNCC now providing the wrap around support to make things happen,
• Outside perception of city changing.
An Alternative Means to Generate Urban Codes: An Instrument for Urban Design

This research has developed a methodology to generate urban codes to achieve the desired configuration for neighbourhoods. Urban codes refer to the embedded quality of urban forms which either evolved by itself or is guided by rules & regulations. This research concludes with a mixed methodology of top-down and bottom-up urban design approaches. Regarding design decision-making, there is a gap between top-down and bottom-up urban design approaches.

On the one hand, the top-down approaches define urban forms as a holistic matter which only can be calibrated by urban professionals. Rare information is accessible for the end users to predict the urban forms. On the other hand, the bottom-up approaches have the inability to visualise the urban scenarios. The decisions largely stay as general assumptions. Therefore, we speculate a middle approach to regenerate urban forms taking advantage of the instrument engaging stakeholders in complex urban design decision-making processes. The novel instrument proposed in this paper brings together city level and local neighbourhood data to aid participatory design decisions and decision-making platforms for urban design.

We utilise an alternative integrated approach to investigate urban patterns, urban forms, adaptive systems and other formalisms in a design procedure. Through an algorithmic knowledge-based system for neighbourhood design, urban designers, developers, and stakeholders can participate democratically in an urban design platform from where they can come up with an inclusive design decision for their future neighbourhood.
Short Term Games, Long Term Gains. A plan to foster Adelaide’s Urbanity and Identity through the Commonwealth Games

The problems that plague Adelaide have become normal to us, but that doesn't mean normal solutions are going to work. Urban Designer and Architect David Cooke came up with a radical plan for the city, that uses the Commonwealth Games as a catalyst to increase Adelaide’s city centre population, economic development, community activation and urban quality.

The Commonwealth Games could create a better future for Adelaide, what would need to be done to hold the event in the city, and what legacy those choices would create are detailed in a staged approach, that provides a diverse mix of urban infill housing, walkable blocks and improved transit. The design proposal increases the urban quality and attracts residents back to the city centre and improves the overall tourist experience.

In unpacking this work, it is proposed how to complete Light’s original city plan of Adelaide and deliver an urban identity that solves many of Adelaide’s urban challenges and delivers a sustainable economic and urban future.
Infill Community.
A New Approach to Deliver Inner-City Neighbourhoods

The removal of parts of the Bay Bridge on-ramps and Embarcadero freeway from the South of Market (SOMA) precinct in San Francisco left this inner city neighbourhood fragmented and disconnected. When such large pieces of urban infrastructure are removed from a city fabric, lofty political targets in terms of population and development outcomes fill the void. Traditional city policy and procurement models are then used as the tools to deliver such outcomes. While successful in delivering residential outcomes, they fall short in delivering housing diversity.

This presentation questioned the current City of San Francisco policy that each developable block is a development parcel and proposed an alternate approach that was based on delivering missing middle housing typologies. The approach introduced a series of design rules and codes that focused on providing what this area desperately needed, affordable and flexible family residential outcomes. The proposal demonstrated how lofty political targets could remain and in fact be exceeded to deliver a greater community outcome.

The presentation concludes by demonstrating how this innovate approach to deliver missing middle housing and urban repair can be used successfully within an Australian context with two case studies from inner-metropolitan Adelaide. Each case study unpacks how an integrated approach with Governments, Councils and housing developers can deliver diverse and economically sustainable urban outcomes, while solving a communities housing issues.
Urban Planning in the year 2020: New technologies to parametrically maximise acquisition site value

Dr. Benjamin will be presenting the job roles of the future for Urban Planning and what new Urban Planning technology is on the horizon. He will also demonstrate some of the latest R+D that the Institute of Digital Design Engineering team is working on. Including the ArchiStarr Parametric Site Maximiser, which parametrically creates 3,000+ urban designs per hour, maximising project sale price and fully complying with Local Government requirements.
By 2050, cities will be home to 70% of the world’s population and the effects of climate change and resource scarcity will become very real. As the forces of globalisation and the need for sustainability converge in our urban communities the role of urban design will become more pronounced. Bold aspirations of the past will confront a future of low economic growth, deteriorating climate and increased global migration. Meanwhile, rapid advancements in mobile, renewable and transport technologies will offer new opportunities for cities to harness.

As technology and sustainability merge with our daily lives, our homes and our workplaces, the design of buildings will evolve accordingly. Today’s green buildings will become the fax machines of tomorrow, as market forces drive more sustainable and advanced architecture. With population growth increasing the pressure on transport and open spaces, our public realm will need to perform better as well, providing for the movement and recreation of more people and a greater resilience from extreme weather.

By 2050, prestige green buildings and vehicles will be commonplace; however the performance of the public realm, public transport and more affordable buildings seems less certain. How can urban designers, planners and architects help deliver sustainable urbanism for all? And what are the learnings from pre-war cities that evolved before the arrival of motor cars and cheap energy?
Ms Michelle Cramer  
Principal Integrated Urban Design and Planning, Lendlease

**The Value of Connection: Big Data Analytics and the City**

There is a lot of talk about building a city's connectivity infrastructure - physical or virtual - and how to pay for it. What is unclear is how to reliably determine how much to spend, where to spend it and how to pay for it. This presentation will demonstrate how big data can be used to analyse and predict the infrastructure needs of the city.

The City Life Labs research project recently completed phase one of a Connectivity Value measurement tool to assist provide evidentiary justification for future infrastructure investment and ensure our resources, including capital, are allocated efficiently. The results of the pilot are in and available to be shared.

Key to the research is the application of big data and data science to the problem of understanding a city’s connectivity. This intentionally takes the project out of the more common sentiment survey space to understand how people are truly using the city's infrastructure, and to cross-check if they do as they say do. This provides a factual view of how the city's infrastructure is being used today, with the possibility of providing predictive connectivity modelling for planning, government and developers alike.

Using the case study of metropolitan Sydney, the project uses two-years of Opal data to map and understand how public transport is being used (or not used) across the urban conurbation, NSW Valuer General data to map infrastructure investment to value capture, and ABS data to map shifting employment hubs. Using the vehicle of big data, this demonstrates the inter-relation of planning, transport and land use in the creation of places and how it be applied to decision making.

Michelle Cramer led the research process with the Urban Development Institute of Australia and partners Hames Sharley, University of Technology Business School, University of New South Wales, and Microburbs.
Save our Minds, Bodies and Souls, Not Just Our Town

A tale of how a small rural community taught their urban cousin a thing or two about "Building an Age Friendly Community"

When Ian McCabe, CEO of the Shire of Wyalkatchem, requested the Western Australian Planning Institute of Australia assist them to address the complex challenge of an ageing community, we jumped at the opportunity to help (1).

When you are the CEO of a local rural shire you are not just advocating for the citizens of a community, often you will have a personal connection. The Shire of Wyalkatchem is 194km north east of Perth. It is a community of only 516 souls in 314 private dwellings; with a handful of those dwellings forming the town centre. More than 46% of the "Wylie-ites" are aged 55 years or more, with a median age of 53 years. Ageing infrastructure combined with catering for an aged population is a major issue for the Shire.

With issues associated with an ageing population becoming a daily reality the Shire of Wyalkatchem took the lead. They invited local government community development officers and chief executives from around the Western Australian Wheatbelt to address a common issue "Building for an Age Friendly Community"

The people of Wyalkatchem are predominately farmers and a few town's folk, with no particular interest in urban design but a passion for community. They are however a very pro-active community. When the only butcher closed in town, the community came together (2). In drought stricken times, the farmers still managed to diversify and learn new skills becoming master chefs in all things meat. It was this determination to keep their community alive that has driven the decision to "Build for an Age Friendly Community".

In a workshop environment, local government community development officers and chief executives embraced urban design philosophies to identify age friendly strategies for this passionate, be it small country town:

- Guidelines for the Development of Dementia Friendly Communities (3)
- Healthy Active by Design (4)
- Healthy Built Food Environments (5)
- Curtin University Universal Design Guidelines (6)

This is the tale of David and Goliath, unperturbed by the massive challenge ahead a small town has started the journey to create the type of community they want to grow old in.
Ms Amy Degenhart  
Architect and Director, degenhartSHEDD Architecture and Urban Design

The Missing Centre or, to Put It Another Way, What Is Missing from Our Centres?

There is much talk about "The Missing Middle" in relation to the densification of our suburbs, but the conversation about adding density to our urban centres in a manner that encourages diversity, reinforces home ownership, embraces the street, enhances safety and respects community legacy is also largely missing from our current city-building tool kit.

Adopted by many urban dwellers, high rise living is not loved by all, but often serves to create a vacuum in our city centres, challenging housing diversity by alienating first home buyers, owner occupiers, legacy residents and some cultural demographics. Further, both mid and high rise structures also neglect a key affordable domestic construction resource readily available on the Gold Coast...the "nail bag builder".

Starting life as an exemplar of "Small Lot Housing", ENVI Micro Urban Village, a 10-micro-lot urban-infill subdivision, was the vision of a partnership between an architect and a planner, inspired by their joint love-or envy-of the terrace housing form found in celebrated cities like Rome, New York, Melbourne, London and Vietnam.

The ENVI story began in 2014, and, as of August 2017, will achieve a milestone through the settlement of its unique freehold urban-infill lots, averaging 60m2 in size and 3.6m in width. As each lot is front-loaded, making the most of every resource, it is not just land area and frontage that denotes the innovation of this project, but it is also the three lots that have no provision for on-site car parking, being instead supported-by, and supportive-of, the new Gold Coast light rail public transport system.

As ENVI houses are now under construction, from the Pico Pod that sits on just 38m2 of land, to the Village Home, designed to rival the suburban dream, this uniquely Gold Coast densification, renewal and innovation story is ripe for the telling.
**Mr Guy Dixon**  
Founder and Inventor, Networked Infrastructure National Architecture

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**Understanding the Economics of Adapting Existing Urban Environments to Water and Energy Self Harvesting and Generation and Breaking Down the Economic Barriers to new Distributed Urban Services**

An ideal urban environment and habitat would have micro grids for local solar distribution, rapid charging for electric cars at the curb, road water isolation, rainwater water harvesting storage and distribution, totally secure IT unlimited bandwidth, multiple water systems, no local flooding, infrastructure hardened and protected against storms, flood, fire, earthquake.

The challenge faced by urban designers and local government is that the costs of adapting urban environments to the above functionality and resilience is beyond the the current economic capacity of most communities. We describe an alternate economic and investment model based on a new urban operating system that overcomes these barriers, is Pareto efficient (no one worse off) and achievable for most local communities.

We consider an investment property trust model that delivers a commercial rate of return and opens up urban adaptation to a broad range of investors including residents, local government, property developers and superannuation funds. In this model direct investment by government is not a necessary requirement and all of the challenges of climate change, economic growth, increased productivity and broad based growth in local amenity are met.

A worked example for a state such as NSW will be presented to show the sources of economic growth, gains in productivity and a transition to full environmental sustainability (carbon neutral or negative) is demonstrated.
Miss Tashia Dixon  
Principal Urban Designer, Melbourne Water

**Embedding Urban Design at Melbourne Water: Innovation through Uncertainty**

Melbourne Water has played a vital role shaping Melbourne and the health of its inhabitants since the 1800s. Originally the Board of Works, Melbourne Water built the underground sewerage systems and protected the closed catchments which supply the city with clean drinking water today.

Melbourne Water's role continues to evolve to meet new challenges that pose a risk to the population's health and wellbeing. Today these challenges are linked to the next evolution of city life as populations grow and quality open space diminishes.

Melbourne Water's total land holding is 33,000 hectares comprised of 72,750 sub parcels. As the second largest land owner in the State of Victoria, Melbourne Water must play a lead role in the delivery of places that support active, vibrant and healthy communities.

To meet the new challenges arising from our changing urban landscape Melbourne water is introducing new services into its business. Urban Design is one of these new services.

Urban Design provides Melbourne Water with a new lens to view its land with. It can provide different strategies and tools to support collaborative processes with the goal to reconnect our assets to their local context.

To extend our view from the edges of our assets to the places that support them requires new thinking, challenging the status quo, a change in mindset and a safe to fail environment within Melbourne Water.

This presentation will outline the learning journey the Urban Design Program is undertaking and the issues arising when a large engineering and science based organisation steps into a space of uncertainty and complexity.

**Goals of the presentation:**

- Provide an overview of the Embedding Urban Design Program at Melbourne Water
- Outline the key features of the 'change management approach' used to embed urban design at Melbourne Water
- Discuss what success looks like and the challenges being experienced along the way
- Provide take home lessons for the Conference attendees.
Mrs Ella Du Plessis  
Acting Program Leader Centers Planning and Urban Renewal Program, Economic Development and Strategy, Logan City Council

Transitioning from 'Visioning' to 'Doing' - The Springwood Summit outcomes

Councils are great at crafting master plans with great vision - the challenge is to transition from this "project-led" investment mindset (visioning), to a "place-led" mindset, supported by a commitment to collaboration with business, investors, practitioners and community (doing).

To progress Council's vision for Springwood - to become South-East Queensland's next CBD - Logan City Council hosted the Springwood Summit, designed to engage with various levels of government, development industry, planning and design professionals, community and land owners in a meaningful way to identify actions to unlock the economic and placemaking potential of Springwood.

Following the summit 190 people provided submissions, resulting in 484 ideas being collected. Ideas were categorised to align with urban design themes used during the summit, summarised and incorporated as 'idea pins' on a digital 3D model for Springwood.

The summit resulted in identifying 10 primary actions and 30 initiatives that Council endorsed for implementation resulting in key projects and programs being prioritised for delivery to achieve Council's vision for Springwood.

These actions and initiatives were included in an Implementation Plan that aligns with four key urban design themes and seven implementation strategies for Logan City. A Place Management model will be used for delivery of place-based outcomes, coordinated by a Place Manager, who will progress key city making projects and programs for Springwood.

This summit brought together different branches and disciplines across Council to work collaboratively and demonstrated the ability to generate and deliver whole-of-Council initiatives using innovative engagement practices to successfully transition from visioning to doing. Through collaborative governance, this model of "place-led" investment is now being replicated in other centers across Logan City, supporting Council operations where information needs to be presented to and gathered from the community, government, residents, interest groups and business to prioritise projects to realise the vision for the centre.
Reclaiming the Street: A Decade of Recreating America's Streets and the 'Sadik-Khan' Effect

In 2007, in response to decades of car-centric planning, New York City's Department of Transportation Commissioner Janette Sadik-Khan led change that completely reimagined the city's streets and drastically improved conditions for pedestrians and cyclists throughout the city. The most notable project was in Times Square where large swathes of the street were turned into a pedestrian plaza and blocks of Broadway were closed to traffic. The changes happened quickly and the materials were inexpensive. In a stroke of brilliance, New York City Department of Transportation referred to this one and the many other similar projects as 'pilot projects'. If they proved not to work they could be removed and the street could easily be returned to its former state. But, for the most part the changes did work. Times Square and other initiatives, including the miles of new dedicated bike lanes have now been turned into permanent features and the public realm in New York City has been transformed.

What Janette Sadik-Khan and her team did in New York City was admirable, but the nation-wide phenomenon that followed is nothing short of incredible. Similar projects popped up all around the country. The mood was euphoric in transportation and design circles. The concept of streets as places solely for the automobile was finally being seriously challenged. While the idea of trying to improve streets wasn't new, the speed of delivery was. The 'pop-up', 'temporary', 'pilot' culture had arrived. A decade on, this culture has made a huge impact on city streets both around the country and around the world.

In particular, this presentation examines how streets have been reimagined in Los Angeles as a result of this movement. Los Angeles has long been the poster child for the car-centric city, but this image has been seriously challenged over the last decade. Three projects that show this change will be showcased: CicLAvia (LA’s car-free streets program), MyFigueroa (Figueroa Street Streetscape Project) and Sunset Triangle Plaza.
Introduction: Higher density residential developments are being built across Australian cities to achieve population growth and sustainability targets. However, apartments in each state are guided by different policy requirements, and some are more comprehensive than others. We examined apartment design policy in Australia and compared it to the health evidence to identify whether policy and evidence align - that is, are we building healthy higher density?

Methods: The review was structured around seven design themes identified as important to health: daylight/sunlight; natural ventilation; thermal comfort; internal space; outdoor space; outlook and acoustic privacy. The policy review examined state apartment design codes, and extracted the requirements that related to each design theme. The literature review included English language peer reviewed papers (n=31) (2005-2015) that addressed a design theme and a health outcome in a high density setting.

Results: There was strong evidence linking natural ventilation and thermal comfort with health; consistent evidence associating access to sunlight and acoustic privacy with health, but relatively limited evidence that outlook and space impact on health. The counterpoint to this was that apartment design policy across Australia generally provided less guidance on natural ventilation, thermal comfort, sunlight, and acoustic privacy (where the health evidence was stronger), but more comprehensive guidance on space and outlook (where the health evidence was limited).

Conclusion: Apartment design policies are generally not empirically derived or evidence-based, but tend to be based on practice and professional opinion. Conversely, no health studies appear to design their research with the intention of measuring and analysing the impact of the specific design requirements (or standards) that shaped their apartment stock. This is important, given rapid urbanisation, and increasing densification of cities. Future research should address the policy-evidence mismatch by testing whether the implementation of design policy requirements can promote residents' health and wellbeing.
Western Sydney is at the tipping point of major urban transformation. One million additional people over the next 20 years and the opening of the Western Sydney Airport are catalysts for significant urban development and economic activity in the region. We have the opportunity to disrupt the Sydney CBD centric planning practices of past 200 years to create a Western Sydney region that responds to the needs of the community in the next century.

The successful urban transformation of Western Sydney will be dependent on these key factors:

1. Establishing a connected and multi-centred city
2. Providing an adaptable and robust urban structure
3. Innovating to become a Smart City
4. Creating place for vibrancy and resilience
5. Realising the vision through partnerships and investment incentives

Addressing these key factors will be a major challenge rendered more difficult through unpredictable environmental impacts and the social inequalities of our times. As city shapers, we need to face these challenges and lay the foundations for better and sustainable cities.
Mr Craig Gillette  
Senior Urban Designer, Department of Planning and Community Development

**Beyond the Bollard: Responding to urban terrorism**

Since July 2016, 120 people have died and more than 600 injured in 7 different countries as a result of vehicle based terrorist attacks. These incidents are symptomatic of a shift in the focus of terrorist organisations over recent years to ‘soft’ targets in public spaces. These actions threaten the agendas of urban planners and designers in achieving liveable, universally accessible cities, prompting new urban counter-terrorism strategies.

Can these strategies address the desire for safety in the public environment without result in a new architecture of fear? Extending beyond the ‘National Guidelines for the Protection of Places of Mass Gathering from Terrorism’ as a basis for, this paper will explore the role of design in responding to the threat of urban terrorism by examining the mechanisms and means available to designers and planners.
Ms Diana Griffiths
Director of Urban Design, Studio GL

Moving Beyond the Circle - Shaping Australia's Future Cities

Over the next few decades many Australian cities are expected to fundamentally change, to rapidly transform their urban structure to accommodate significant population growth. Bernard Salt, in March this year, made the confronting projection "There will be more growth in Australia's biggest cities over the next 30 years than in the biggest cities of the developed world." Understandably our growth seems inconsequential compared to that of the developing world but we shouldn't underestimate the impact of this growth on our highly concentrated city system and the quality of life in some of the world's most livable cities.

Our current planning systems are designed to accommodate incremental, not disruptive, change. We are hamstrung by our reliance on crude tools. We rely on 400/800m circles rather than detailed walkability analysis. We apply land use zones that encourage a new monoculture with a consistent density rather than a diverse mixed community. We assume that heights, setbacks and floor space/plot area ratios are an effective and desirable way of controlling bulk and scale on all sites regardless of their location, their size and their shape.

Faced with a disruptive process we can't assume we have the luxury of time to revise our ideas and correct our mistakes. We need designed interventions, we need to get more right, and we need to do it sooner.

And we can. We can go back to basics. We can recognize that what is happening in Australian cities now is transformational. We can do more than just increase the density of our cities. We can also understand the quality of our cities, what makes them great places to live and to use the demand for growth to also expand and enhance the livability and desirability of our cities.
Urban planning regulations shape our cities as they define the building height or FSR to name but two. Here urban planning regulations have, in a simplified view, two main stakeholders - the ones who define the regulations, councils, and the ones how plan with them, architects and urban designers.

Whereas the first group is challenged by defining regulations that need to be applied at each cadastral in a council - without having the chance to evaluate each single cadastral upon the efficiency of the proposed regulation, the second group has then to compile all regulations and translate them into a built form - by accessing and evaluating in a time consuming manner several dozen documents.

This paper aims to address this challenge as we argue that urban planning regulations can be interpreted as logic within a software program. A developed script utilises existing regulations; setbacks, floor space ratio, etc. to generate a building envelope of permissible space. This would act as a visual description of build policies and potentially lead to a better understanding of the intent behind specific rules, as well as help inform better urban outcomes.

Based on literature review, the paper will first discuss the motivations behind encoding building regulations, as well as technical and ethical constraints, and investigates of the relationship between GIS software and computational tools.

Secondly we present a script, developed through an agile method that takes existing City of Sydney 2D Local Environmental Plan datasets to develop 3D permissible building envelopes. The resulting 3D form is visualised on a website with an interactive interface to meet the main objective of this research - informing councils prior to passing legislations about their impact and to help designers to develop building envelopes time efficient.

This investigation, its proposed hypothesis, methodology, implications, significance and evaluation are presented in the paper.
Mr Michael Haines
CEO, VANZI

3D Qld and the Digital Built Environment

In early 2016, a combined industry-government Taskforce in Queensland appointed a consulting team led by ACIL Allen Consulting in conjunction with VANZI to prepare the Road Map for 3D Qld to create the Digital Built Environment (DBE): a federated authorised secure 3D computer model of the natural and built environment (inside and out, above and below ground) on all scales required for decision-making.

Crucial to the DBE is the integration (within the model) of an accurate 3D Cadastre to facilitate:
1. location of boundaries on the ground
2. decision-making in the model, and
3. privacy and security by linking access to parts of the model to each entity’s rights in the real world.

The team has since undertaken extensive interviews with stakeholders across all sectors: local and state government, utilities, surveying, architecture, engineering, costing, finance, fabrication, construction, fit-out, lighting, painting, decorating, landscaping, insurance, asset and facility management, leasing, valuation, sale and decommission; through to agriculture, transport, emergency services and disaster recovery, as well as many hardware and software providers that offer the capability to create 3D computer models of the real world.

From these interviews, it is evident that there are no technical impediments to the creation of the DBR. Research has also identified conservative $3bn of benefits to the Qld economy ($15bn for Australia) - once fully implemented. These benefits are derived from linking newly created individual 3D models into a Digital Built Environment for use by future generations.

In time, it is expected that every bit of information about any object will be linked to its digital twin and located in its actual spatial context, so that it can be accessed by merely 'pointing' at the object in VR or AR.
Mr Graham Hammond  
Director of Physical Geography, Geoscience Australia  

Co-authors:  
Mr Shane Crossman, Project Leader of Discoverability and distribution, Geoscience Australia

**ELVIS Isn’t Leaving the Building, It’s Helping You Design It**

The Elevation Information System (ELVIS) is Geoscience Australia’s delivery platform for digital elevation model (DEM) data holdings. This program of work operates under Geoscience Australia’s National Location Information Branch. ELVIS incorporates cloud data storage and delivery to provide a cost effective mechanism for serving open data that describes Australia’s landforms and is crucial for addressing issues relating to the impacts of climate change, disaster management, water security, environmental management, urban design.

Over the last 12 months, since releasing ELVIS, we have delivered 15 times more data than the last 8 years combined. When Geoscience Australia looked at who was downloading the various elevation products two new communities stand out Engineering and Urban Design. This presentation is about building awareness of elevation information. Data that is available to you to download today, for free. We will travel through what is elevation data, demonstrate how easy it is to access data and then looking at some data and how it potentially can assess and support better design.

Two years ago we had no idea we were involved in supporting the urban design community. Now with awareness, we want to build the support and understand how we can provide better more industry targeted solutions to promote better decisions, design and outcomes.
**Campbell Parade Streetscape Upgrade**

Campbell Parade Bondi Beach is the gateway and urban edge to the world famous Bondi Beach, attracts significant pedestrian volumes and is a crucial part of the beach experience for residents and visitors.

In the absence of a co-ordinated design strategy, the footpath and street furniture and overall streetscape quality has deteriorated and is in need of renewal.

The Campbell Parade Streetscape Upgrade provides the vision, principles, conceptual plan and design guidance for future streetscape works. The goal is to create a high quality world class street. The presentation will consider the issues and consultation process undertaken to prepare this comprehensive Urban design Policy and the use of private interests to act as a pilot project in the delivery of some of the key elements of the concept plan so that they may be evaluated and agreed to prior to delivery.
Planning for Electric Vehicles - How Queensland is charging ahead

Electric Vehicles (EVs) are said to be the vehicle of choice for the future. This growing technology will change the way we interact with our vehicles and the systems that support them including fuel supplies, electricity networks, road networks, car parking, drive tourism and even the local economy.

How can we encourage the uptake of EVs to plan and be ready to make the most of this emerging opportunity? What policy, planning and infrastructure is required to support EV uptake in the residential, business and tourism markets in regional Queensland?

This new area requires special attention in planning and infrastructure investment for our cities. Economic Development Queensland in conjunction with Energy Queensland and Local Government has developed a collaborative solution to build the dream and drive EV uptake....

The Electric Superhighway in Queensland, the longest Electric Vehicle route in any single jurisdiction in the world.

Cairns is the first location installed on the Electric Superhighway and has been a testing ground for a model of public place chargers that will be rolled out through the whole state.

This case study explores questions such as, where should public place chargers be located? what applications and approvals are required? What are the infrastructure requirements? Should this be a free service or paid for by the consumer? How do we regulate or enforce time limits on using chargers? How do we support local businesses and fleets to invest in EVs?

The Electric Superhighway has been planned with a strategic approach. Part of the rollout will be developing a supporting policy and context. The learnings from Cairns are key to the success of the program.
Mr David Head  
Head of Urban Design, Mirvac

Connectivity, Amenity and Place- How can age old ideas disrupt the current state of our cities?

Australian cities are being disrupted. The rapid pace of change is a major challenge in achieving connected, thriving communities. Neighbourhoods are being raised from their suburban slumber through increased density, site amalgamations and an increase in mixed use developments. Whilst most professionals agree that this is fundamentally what our cities need, how do we adapt our approach and ensure this rapid change is beneficial for all? How do we bring communities along the journey rather than ignore their objections? Integrated master planning with walkability, connectivity, amenity and thriving public spaces as essential objectives is key to public acceptance to create more equitable cities.

Striving to ‘Reimagine Urban Life’, Mirvac has refocused its energies to creating truly mixed use communities, enhancing the neighbourhoods in which they sit. Deep customer research has informed our view of what future neighbourhoods must contain and the results are positive. People value community, amenity and a sense of place. A collaborative approach from Government and the private sector is required to achieve this. In many cities a lack of coordination between agencies providing the necessary infrastructure to achieve these goals is sorely apparent. Utilising recent project examples from Abu Dhabi, the UK and Australia I will explore how we can ensure people are at the heart of the design and planning process.

Our refocus on the inner and middle rings of our cities with projects such as Harold Park and Marrick and Co. in Sydney is delivering well connected and sustainable places responding to their heritage and existing communities. Our revitalisation of the Australian Technology Park in Redfern is firmly establishing it as the innovation hub of the future. Placemaking is at the core of our approach to embed it within its surrounding precinct. It is disrupting the outdated concept of a Business Park to truly become a connected and thriving place.
The GPOP Green Grid - Making Sydney's New Heart Cooler and Greener

Greater Parramatta and the Olympic Peninsula is the geographic and demographic heart of Greater Sydney. Around $10 billion of public and private investment will be delivered within GPOP in the next 5 to 10 years. The area is being transformed into a great river city. It will become one of the most liveable and dynamic parts of Greater Sydney.

A key challenge to make the area livable is adding large amounts of greenery, to help mitigate scorching summer temperatures in the area, and to encourage active transport.

We explore the business case for developing an irrigated green grid through the GPOP, including developing a range of greenspace typologies and matching these with a suite of decentralised water supply options.

The latest microclimate research from the CRC for Water Sensitive Cities is applied to develop maps of cooling influence to illustrate the potential benefits.
How do dense inner urban places respond to the disruptive impact of light rail? This presentation covers lessons learned and examples from Randwick City Council on achieving positive urban design outcomes with the $2.1 billion CBD and South East Light Rail project. As a piece of major urban infrastructure, light rail is a catalyst that re-frames the urban fabric, and provides opportunities for place-making, and creation of new experiences and interactions. However, the challenge is to realise these opportunities within the complex procurement and governance framework of a major project. With multiple stakeholders, a constrained spatial environment, and substantial timeframe and budget pressures, there is a need to successfully collaborate to align urban design priorities between state and local government, and actively seek out opportunities to protect the existing environment and realise improvement potential.

As a surface-based transport system, light rail is intimately connected with the ground plane and the public domain, and must be considered as more than simply a transport project. With the light rail route in Randwick City traversing iconic parklands, linking major institutions and event destinations, dense residential locations and fine grain heritage precincts, the urban design challenge was significant. Council was successful in achieving major urban design improvements, including relocation of a light rail terminus and bus interchange away from a heritage listed park, creation of new public spaces, and streetscape improvements to commercial centres. This talk will review the urban design opportunities and interventions realised by Council, via 3 broad avenues: 1. Policy and formal agreements; 2. Negotiated outcomes; and 3. Council-led projects. It will conclude with lessons learned and thoughts on the essential components of working successfully within the framework of a major infrastructure project to achieve positive urban design outcomes.
Dr Malcolm Holz
Founder, creativesuburb.com

Quarkitecture: A Queenslander's Experience of Micro-Small Dwelling
Mr Mike Horne  
Director, Turf Design Studio

Remaking Our Cities - The Vital Role of Public Realm

Australian cities are intensifying - in response to population growth, changing demographics, new economic forces and environmental imperatives.

As a consequence, the public realm of our cities is being squeezed.

The city's public realm is literally shrinking; consumed by more people, more buildings and more roads - creating more pressure and more demand on our ecological and cultural resources.

In Australia, the intensification and reshaping of our cities is seen in three major trends:  
- Suburban 'squeeze' - the quarter acre block is long dead. New Greenfield suburbs with smaller lot sizes for dual occupancy, villa and townhouse development leave precious little room for the iconic Australian 'backyard'.

- Recycling the post-industrial landscape and the apartment boom - former industrial sites within or surrounding the inner city circle, and beyond. These sites are often redundant industrial / brownfield sites, often encumbered with ground or water pollution issues. Proximity to urban amenities and environmental resources create value and underpin development feasibility.

- 'Living Cities' - the growth in city apartment living, driven by demographic change and access to urban services is transforming CBD centres from traditional business districts into ever more diverse centres for urban living, albeit with mixed success.

So what has and will become of our public realm under these forces of change?

What is the role of design in responding to these forces?

Clearly an improved public realm is required - better networks of streets, squares, parks and urban wilds.

The presentation will explore recent approaches and responses to these issues through the prism of our recent projects including Central Park, Kensington Street, Sydney Park Water Re-Use Project, Central Barangaroo, Northshore Hamilton, and Goyder Square, Palmerston.
Mr Jonathan Howe  
Sector Lead - Architecture, Jacobs  

Co-authors:  
Mr Chris Walker, ESD Lead - Australia, Jacobs  

**Australian Education City - Where Ideas Come to Life**  

The Australian Education City (AEC) offers Victoria a bold vision to transform Melbourne's west with a $22 billion "super city", a place where ideas come to life, a place of possibilities, opportunity and potential. AEC is focused on creating a smart eco-city that will create over 85,000 jobs and cater for the needs of some 100,000 citizens with up to 65,000 residents, diverse businesses, learning institutions and research and development facilities.

AEC is a unique opportunity for a clean slate approach to sustainable, human-centred community development, structured around multiple university facilities delivering education to 40,000 students. At the heart of the design AEC is a commitment to provide engaging and thriving places for people, to understand and respect human scale, and to enrich the experience of residents by linking a culture of learning with a vision for sustainable urban living. AEC residents will have an intrinsic understanding of the positive impact their city will have on services and infrastructure from this unique approach to the built environment. AEC’s vision is to build a world class knowledge hub that epitomises all the aspects that make Melbourne the most liveable city in the world and synthesise these with cutting-edge sustainable technologies from around the world to create a unique embodiment of a modern city.

AEC aims to be Australia’s first fully sustainable city, delivering innovative solutions for long term growth and development. This vision provides an adaptable and flexible, but dense, master plan for a liveable and connected city built around a world-class public realm with distinctive character zones. In support of this vision is a strategy and inclusive framework outlining the city’s commitment to sustainability.

The AEC is a disruptor in green-field city delivery, challenging the sites incumbent Precinct Structure Plan to deliver a more dense, activated and engaged community.
Mr Andrew Hoyne  
Principal and Founder, Hoyne

**INVEST IN A VISION & PROFIT FROM THE RESULTS**

Developers (both private and public) who continue to ignore the links between the concrete and the cultural will soon lose their economic and competitive edge in Australia. They also have the potential to burden this country with unworkable and unloved buildings and precincts, whilst contributing to a downswing in our communities and quality of life.

This is strong stuff, presented from the heart. In his presentation for the International Urban Design Conference 2017 Andrew Hoyne, property branding expert and publisher of The Place Economy, proves how successful placemaking delivers higher profits for developers because places with meaning and resonance are places that people want to be part of.

By substantiating the argument that these same kinds of places and projects translate into more commercially engaging products at a marketing level, Andrew presents persuasive information covering financial realities such as apartments selling for higher prices and leasing deals achieving higher rates per square metre.

At the same time, he can also share a bigger picture with attendees, using real life examples of how places created with people at their heart produce much more significant societal consequences - from increased economic investment in regions by small and global businesses alike, to swifter approval and construction processes, to more sustainable employment paths, plus increased community health and social cohesion.

An experienced and respected speaker on Place Visioning and property branding and marketing generally, Andrew draws on his 25-plus career in the industry, along with insights, case studies, interviews and research from Australia and throughout the world. He is able to passionately communicate how more vision, money, intelligence, imagination, craftsmanship and emotion needs to be invested into our cities and suburbs if we are to maintain the quality of life that Australia is renowned for.
Planning as an Entrepreneurial Method: A Comparative Study on Superblocks in Contemporary China, and Colonial Australia

Over the past three decades, China has been experiencing a rapid urbanisation and economic development. Through institutional innovation of land ownership, a new planning mode with entrepreneurial characteristics had been created. Thus, China's contemporary urbanisation is "a productised urbanisation" with the features of 1. driven by economic benefits; 2. led by a powerful authority; 3. performed as a large-scaled development. As a result, many severe urban issues occurred during the rapid urbanisation.

Similar to China's contemporary urbanisation, the urbanisation in the colonial period of Australia was also a productised urbanisation with the same entrepreneurial features with China's (a productised urbanisation). Thus, two typical cities from different locations and time periods - Contemporary Shenzhen and Colonial Melbourne - are selected as the study cases.

By comparing these two cities, this paper is trying to examine the effects of land ownership and economic principles on the planning of urban blocks. Urban blocks will be explored in order to find out the hidden complexity behind space: the corresponding leading powerful authority and its benefits-oriented logic. In addition, urban life that was shaped, inspired, or implied by urban blocks is going to be analysed as well.

By clearly presenting the corresponding effects of land ownership and economic principles on urban blocks through Melbourne's history, it is my hope that the finding will help to revise the current China's planning, as well as contribute to future planning and construction of urban blocks in China.
Mr Tom Jones
Architect /Urban Designer, Woollahra Council and MAAP Architects

The Setback and Transforming Suburbia

The Setback and Transforming Suburbia

This presentation addresses the thorny issue of urban consolidation and emphasises the essential role 'planning' has in ensuring we can adapt our cities for a sustainable future.

I will articulate a transformation strategy which retains the essential character of parts of suburbia while transforming other locations, using an approach which doesn't rely solely on site amalgamation and residential flat development.

I look at the broad amenity attributes and failings of different development forms using graphics and financial feasibility studies. I then draw conclusions regarding the relative success of each form. I particularly challenge the reliance on the side setback as a universal amenity panacea.

I will then suggest how we might counter a suburban dysfunction identified in the initial comparison. I suggest how targeted transformation will increase affordability, improve walkability, promote a rich and diverse built form and provide for greater engagement with the public realm. And I look at how this might be achieved while actually improving the amenity of dwelling.

I discuss the current planning directions taken to facilitate suburban intensification. I will look at how policies such as the UKs Party Wall etc. Act 1996 and other overseas legislation might facilitate change and I consider their failings.

I work as an architect and urban designer at Woollahra Council designing building controls and commenting on significant development applications. The Woollahra LGA features some of the most prized land in Australia and features a full spectrum of Australian residential built form including: large homes built on land grants, early workers terraces, suburban mansions and high rise towers. It also features the particular public realms associated with each of these forms. These provide excellent case studies for this presentation.
Dr Shahed Khan  
Associate Professor, Curtin University

Co-authors:  
Julie Brunner, Online Academic Programs Coordinator, Curtin University

**Developing Sustainable Environments through online Collaborative Problem Solving**

Australian urban areas, similar to urban areas world-wide, face significant challenges. Whilst not all these challenges are new, many have not been so critically experienced in the Australian context previously or at least at such scale or complexity. Challenges such as climate change and global warming, poverty and housing affordability, ageing and growing populations and the change that technological advancements brings all require addressing in our designs for urban environs.

In addition, globalization of world economies and the rapid social transfer and sharing of knowledge has added pressures by juxtaposing global issues alongside local concerns. These pressures are amplified in our urban centres where human activity is most concentrated and require some urgent change to the ways of working of professionals in planning, design and construction, to their education, to governance structures and policy and to the nature of outcomes.

To educate globally literate students with a solid foundation to be the drivers and informed agents of change requires knowledge of ecological and socially sustainable urban environments and communities. Graduates need the tools, critical decision-making skills and courage to diverge from current practices, to think, learn, dissent and discuss outcomes and embrace new approaches. Curtin University has created a challenge-based learning platform which is an online digital model of learning that incorporates problem-based learning, project-based learning, and contextual teaching and learning while focusing on potential solutions to current real world problems.

The challenge platform forms an ecosystem of learning targets for international problem-solving teams to self-organize, to exchange ideas and experience and then to collaborate on solution proposals to wicked problems in a game-like environment that supports and encourages the learner to think outside the box.
Civic Link - Framework Plan for Parramatta CBD's Green Spine

The Civic Link will provide a continuous green spine through the middle of the CBD, linking the River Precinct to Parramatta Square, whilst providing new public open space and pedestrian connection through the heart of Australia's fastest growing city.

SJB and Aspect Studios were appointed by the City of Parramatta to prepare the Framework Plan for the Civic Link, which has been exhibited and presented to Council for their endorsement. The key component of the Plan are a series of strategies that intend to safeguard the delivery of the 20m-wide link along its length, and ensure the quality and amenity of the space. These strategies address built form along the frontages and neighbouring properties, solar access and environmental conditions, character and activation, just to name a few.

The project has been facilitated by Council-owned land, including the existing Horwood Place multi-storey car park, which is being removed and reprovided as part of a city-wide parking and transport strategy. The north/south link enables direct connectivity between the station and Parramatta Square, along the existing alignment of Horwood Place to the Roxy Theatre and proposed Museum of Art and Applied Sciences (MAAS) on the banks of the Parramatta River, which has been the subject of its own award-winning precinct plan.

An allowance has been made for the staged delivery of the Civic Link, with particular emphasis given to the ongoing servicing and access to properties fronting Horwood Place, which will be ultimately closed to vehicle traffic.
Mr Henry Lau
Architect, City of Saskatoon/HLArchitect Inc.

Co-authors:

**Public Space Transformations on the Land of the Berries**

The thirty minutes oral presentation will include digital images and project backgrounds, community histories, project challenges & accomplishments, project strategies and innovations. The project areas are the three Business Improvement Districts in the City of Saskatoon, Saskatchewan, Canada.

The Central Avenue Business District - Public Space Improvement Project
The Central Avenue Business Improvement District is located in a historic Canadian National Railroad community of Sutherland founded in the turn of the last century. Only minutes away from the University of Saskatchewan, this historic community is also a popular neighbourhood for university students today. The revitalization work started in 2009 with two phases of the original design completed in 2016. The Central Avenue Business Improvement District continues to evolve into a unique and sustainable, livable community. Phase three of the streetscape improvement is slated for 2019.

The Riversdale Business Improvement District - Public Space Improvement Project
The Riversdale neighbourhood is one of the oldest neighbourhood in the City of Saskatoon with a diverse mixed of cultures from around the world founded in the early 1900. The streetscape improvement began in the mid 1980s. The improvement work phase 1 was completed in 1986 and phase 2 and 3 started in 2012 and completed in 2015. The Riversdale streetscape improvement project is a brownfield redevelopment project with a number of innovative ecological responsive designs. The Riversdale Streetscape Project received an international design award in 2016.

The 21st Street Streetscape Improvement - Public Space Improvement Project

The 21st Street of downtown Saskatoon is the oldest retail neighbourhood in the city. The historic 21st street is flanked by the two most iconic structures in the city, the historic Delta Bessborough Hotel on the West and the Midtown Shopping Center on the west. The streetscape improvement design and construction started in the spring of 2017 with a number of design innovations and ecological responsive designs as part of the project. The entire project is aim to be completed by 2018.
Binding and Connecting our Lifestyle to Urban Public Spaces is a Key Factor towards Environmental Economic and Social Sustainability

Geological atmospheric and human foot prints are three major elements responsible for disruptive interventions and divergence of any urban structure. Taking the first two elements on board as inevitable and irreversible factors this paper focuses on a major necessary shift in human behaviour environmentally economically technologically and Socially.

As a town planner interested and worked on Public Realm for the last 6 years I have become more certain of the imperative relationship between an innovative design in public open space and environmental economic and social sustainability not only locally but globally. Taking advantage of the current formative technological interventions towards making change design is one step towards achieving a higher standard in these three survival aspects of an urban structure and lifestyle Environmental Economic and Social.

One main key factor in this mission is Social awareness and Community Interaction reached by our most accessible nowadays tools such as the internet social media and many other means of communication. Another goal is integrating other fields of sciences into making changes possible in urban design creation and process.

To further narrow down the research having Public Realm the area of my interest one simple example of my vision is integrating censored walk and bike tracks interactive wearable devices and memory maps as tools for further connecting and binding a sustainable social and environmental interactive system in which the recorded steps or mileages of our bike rides via a Bluetooth system connecting the walk bike ways to our wearable devices, indicates the amount of energy produced by the steps taken rides made ultimate pleasure of interactive memories registered on the MAP increase in physical activities healthier citizens and less human footprint on ecosystem are the paths leading to a more sustainable future globally.
Mr Alex Matovic
Director, HDR

Making Mountains out of Mole-Hills in Macquarie Park - Talavera Road

This is a story about how making the most of even the most humble-seeming project can lead to extraordinary transformations in our cities.

A run of the mill commercial building design and business park make-over in Sydney's Macquarie Park has evolved into a project that challenges the cycle of 'don't rock the boat' urbanism that calcifies middle ring capital city town centres across Australia.

Taking the learnings from other HDR-Rice Daubney transformational projects lying at the intersection of hard commercial reality and latent public demand, Talavera Road provides lessons on:
how to align a client's commercial focus with the ambitions for a radical urban rethink;
how to find and structure a consultant team to help resolve, extended, and deliver a challenging concept;
and most importantly, when to be modest and when to be bold when it comes to the forgotten and underestimated sections of Sydney's public realm.
Art and culture; what do they mean in urban development?

The words art and culture have become conflated.

When a government or developer commissions a piece of art it enables them to tick a box marked Culture.

Our practice based research set out to establish whether this is a sound model - and to explore what it is that enables governments and developers to fulfil their cultural obligations by commissioning art.

We identified two forms of culture relevant to the urban development environment. We call the first Learned Culture. This is artistically-led culture where the definition of the word culture draws from the Roman ideal of cultivating one's intellectual and aesthetic faculties. It is embodied in the modern cosmopolitan city of fine architecture, galleries, visual and performing arts. When a government or developer commissions a piece of art it is Learned Culture that they have in mind:

The second type of culture, less considered, is Lived Culture; the features of everyday existence shared by people in a place. It works from the premise that culture is not something that we consume; it's something which we all actively co-create.

Lived Culture is made up of the things that make us human, develop our ability to connect with one another and forge deeper relationships with the places we live - themselves intimately entwined with the cultures they support.

We conclude that as an outcome of urban development, Lived Culture is at least as impactful as Learned Culture even though it attracts considerably less attention. We call this the Development Delusion.

We will explore how development process can change so that it contributes to Lived Culture by expanding its ambition and scope.
A/Prof Rob McGauran
Professorial Fellow Urban Design and Architecture University of Melbourne and Adjunct Professor Arch, University of Melbourne and Monash University

Co-authors:
Ms Katherine Sundermann, Studio leader / Associate, University of Melbourne / MGS Architects

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The creative and knowledge economies as the generators of positive and authentic urban transformation in post-industrial Melbourne

How might inner city 19th and 20th century manufacturing neighbourhoods embrace of creative economies in order to retain their authentic and enduring narrative as they shift into the digital age? In 2017, Naomi Milgrom AO, OMA (Netherlands) and MGS Architects developed a strategic analysis and vision for the post-industrial area of Cremorne, Melbourne. This research was undertaken through consultation with local and state government and community representatives to determine relevant and strategic ways of engaging with the planning system, with the aim of protecting and enhancing the existing diversity of this employment district from conversion into a generic high-rise residential neighbourhood. This strategic vision provides an example of engaging with political and planning processes to guide significant change.

This study has built on earlier projects engaging with 'National Employment and Innovation Clusters' in Melbourne, such as the Monash University Clayton campus (Monash Cluster), La Trobe University Bundoora campus (La Trobe Cluster), Victoria University Cluster (Sunshine Cluster), and Arden Metro precinct (Parkville Cluster). Through these case studies we hope to demonstrate how local research and lessons from overseas case studies have been considered, interpreted and applied with a local dialect in order to create resilient employment districts, demonstrating strategies with broader application beyond the Melbourne context.
Mr Denis McLeod
Partner, McLeods Barristers & Solicitors

Infrastructure Cost Sharing Arrangements for Developers: The WA Experience
Dr Bob Meyer  
Director of Planning, Cox Architecture

**Greater Western Sydney - The Nation’s Third Largest City**

When Sydney’s current population of 4.8 million reaches 8 million by mid-century, Greater Western Sydney’s current population of 2.76 million will reach 4.5 million. Greater Western Sydney (GWS) has its own CBD, Parramatta, as well as Australia’s largest Health complex at Westmead; several campuses of Western Sydney University and a significant sport complex at Sydney Olympic Park; and by 2025 will have its own international airport.

Currently the biggest challenge for GWS is the gap between the size of the resident workforce and the number of local jobs, which cause severe road congestion and public transport overcrowding throughout the Sydney Region. The key challenge is to address the jobs shortfall and achieve a balance between the size of the local workforce and the number of local jobs by mid-century, and to develop a diverse array of jobs. Another key task is to provide sufficient community, cultural, health, education and recreation facilities required by 4.5 million people.

To cater for such a diverse population, there will need to be a range of housing built, from affordable housing to executive housing to help establish employment opportunities for residents of all skill types.

Apart from Parramatta, which could become the government’s administration centre for NSW, GWS has several important strategic centres which are an integral component of Polycentric Sydney. Their role and size and the necessary transport arrangements need to be defined as there is no clear land use or transport plan as yet to guide GWS towards the middle of the century.

The paper will address these issues and propose a strategic plan for a GWS by mid-century to allow it to proudly take its place as Australia’s third largest city.
Creating Social Capital through Urban Design

Inequity and social cohesion have been identified by Resilient Sydney as two of Sydney main stresses impacting on its resilience and ability to respond effectively to major shocks. Sydney is undergoing rapid population growth, increasing cultural diversity and increasing density. But what are we doing in response to this growth to deliver the social infrastructure, services, social spaces and spaces that we need to create more equitable, resilient and socially cohesive communities?

This paper looks the concept of social capital and how through urban design and planning, we can create increased social capital in our cities and neighbourhoods that will deliver more equitable, socially cohesive and resilient places, able to deal with future shocks and stresses.

It defines social capital and more current terms such as social sustainability and cohesion, and considers the physical elements of our local areas and cities or "social connectors" that can facilitate its creation, including: social infrastructure; street life and meeting places; sharing spaces and places; education and training; and transport.

Through case studies, cost benefit analysis, and heat mapping, this paper provides local and international examples of places that are creating social capital through urban design, integrated planning and co-design. Places that are walkable, deliver a diversity of housing, are designed to encourage incidental encounters and unstructured gatherings. Places where people from different backgrounds can bond with each other and bridge connections across networks and sense of identity.

It poses the question, what can we learn from these places that we can apply to the design and development of our future cities and neighbourhoods, how are we faring in our new cities and renewal areas, and how can we increase social capital and subsequent social sustainability, cohesion and resilience, through better urban design and resilience.
What is Character and What Do You Do When You Know?

What is the existing and desired character of places undergoing change, particularly those revered by their communities? How do we define that character and if we can, how do we incorporate it in planning schemes and codes. In addition, if all this is in place, how can development assessment and review processes ensure that high quality outcomes consistent with the planning regime are achieved? These questions raise fundamental issues for urban design and there is no consensus. Some places prefer a generalized performance approach, where others specify particular massing, historical styles or pattern books.

Some consensus could be useful as communities have an increased awareness and knowledge of planning, having been successfully engaged in extensive consultation over many years. Expectations have been raised for higher quality design with elevated standards for development applications and assessment. In attempting to embrace character, planning is getting more architectural, so architects and urban designers now provide advice on specific development applications. Councils are employing architects and establishing urban design advisory panels.

The architectural profession has not historically engaged with the issues of character and design, still believing the best design comes with the least controls or scrutiny on individual designers. Criticism of another architects work is often seen as unprofessional, undermining the status of the profession. As a consequence, architects are not necessarily the best design reviewers and do not respond well to design review. Now that most states have government architects, there is now a burgeoning set of documents for good design, and architects are central in their development.

Architects need to take these issues seriously and move to a central position in this debate. This presentation by an architect reflects on 20 years defining character, writing codes and providing and receiving design review in many parts of Australia and climatic zones.
Mr Tony Rofail  
Director, Windtech Consultants

**A Wholistic Planning Approach for Wind**

The wind characteristics of a building both externally and internally are equally important in ensuring that a favourable outcome is achieved for occupants of a development for the public. The external wind environment needs to ensure that a development will not degrade the surrounding wind conditions to the point where pedestrians will no longer be able to continue enjoying the surrounding outdoor spaces or risk being blown over by the wind. Equally important is the assurance that the wind conditions for the outdoor areas associated with the development will be suitable for the intended uses for the majority of the time. This paper highlights a number of good examples of well-considered planning controls for consideration of the wind environment impact.

At the same time, there needs to be sufficient wind through a precinct to generate external ventilation during the warmer parts of the year, particularly in the more temperate climates for air quality and thermal comfort. There has been some attempt by the Hong Kong Government to specifically address this issue. Approaches to natural ventilation need to suit the local climate. A suggestion is made on how both external and internal ventilation can be addressed through an appropriate planning control for developments in two very different climates. For example natural ventilation can be achieved during the winter season in the Gulf region when the weather is favourable and dust storms rarely occur or during the summer months in the densely populated parts of Canada.
Prof Rob Roggema  
Professor of Sustainable Urban Environments, UTS

**Design for Disruption: Creating the Antifragile City**

Changes of many different sorts are happening, and some are disrupting current cities. Debbie and Sandy did, but also migration, and the flight of refugees impact the cities we live in. How can these disruptions be counterattacked, while knowing we are not capable preventing the changes to happen.

In this paper the answer to this problem is elaborated. Could we create a city that becomes stronger when a disruption occurs? Anti-fragility is the process of creating something that during the process of threat grows stronger, more resilient and able to become more beautiful than before. Creating anti-fragility therefore requires a design intervention to allow the disruption to occur, but at the same time creates a more interesting and lively city.

The intervention in urban fabric should lead to adaptation. Questions to be investigated here include: To what does the city needs to adapt? What is the trigger for change? And how can the city be changed in the 'desired' direction?

The city can be seen as a set of layers. The complexity of understanding all these layers at the same time is difficult hence most people deal with only one layer at a time. To create anti-fragility these layers are deconstructed. Each layer, e.g. energy, climate, food, waste, housing, transport and ecology, is optimally designed for change, or to make change happen. Together they may still divert. Thus, at the local level convergence is required to reassemble the resiliency specifications of all layers into a redesign understanding the inter-linkages, the tipping point and spatial change agents that create an anti-fragile environment.

This new anti-fragile city builds on stronger networks, uses smart technologies and follows adaptive systems rules.

The paper will present several design examples of this anti-fragile city.
Mr Joe Rowling
Director, e8urban

Medium Density Master Plans - Planning for an Urban Density in Sydney

In late 2016 the NSW Government Architect launched a design competition aiming at exploring housing typologies for Sydney's Missing Middle. Together with RPS, e8urban developed a non-conforming submission that, rather than exploring housing typologies, demonstrated how an urban design led insertion of housing typologies through a 'Medium Density Master Planning Process' could be used to transform existing low density urban areas to create good urban densities that enhanced urban connectivity, accessibility and amenity.

The work ts well with the conference themes of Disruption, Divergence and Designed Intervention - Making Change Happen, as it is supported by economic modeling and detailed design testing.
Creating Renewable Green Cities, A Review

Despite the increasing costs of climate change and inevitable reduction in the natural energy sources such as oil, natural gas and uranium reserves, most of the urban areas are planned and designed in a way that these crises do not exist. Transition from a fossil fuel consumed city to a renewable city and renewable city infrastructure requires a novel approach, advanced tools, thorough frames and a different decision-making process.

This paper is a guide to this transformation for the cities which are going to be powered by renewable solutions. This paper reviews the priority action areas (such as built environment (e.g., heating and cooling demand), transportations, and green infrastructure) to achieve a renewable/green city concept in built environment. The literature given on the priority areas highlight the importance of integrating renewable and green solutions in the urban planning process. This review serves as a guide to the practitioners, academics and policy makers in communities and cities worldwide, and inform them about the outcome of their decision making.
Dr Heather Shearer  
Research Fellow, Griffith University

Tiny Houses: An Innovative Densification Solution

The tiny house movement is an emergent trend towards building very small houses (under 40m2). It originated in the USA in the late 1990s, largely in response to housing affordability issues and the desire to live more sustainably. It is increasingly popular in Australia, although it remains a niche market, largely due to the barriers, complexities and inconsistencies of local government planning schemes, as well as NIMBYism. Tiny houses however have the potential to address some pressing problems in contemporary urban society, such as housing affordability, ageing populations, decreasing household sizes, and the inefficiencies of poorly designed, large suburban houses. Planners, city managers and design professionals have largely ignored the nexus between the suburbs and the inner city, also known as the 'missing middle', resulting in the majority of Australian cities being characterised by high density, high rise inner urban areas, and large areas of suburban sprawl with mostly detached houses on large lots.

Tentative attempts to change the status quo, by allowing granny flats in some areas, and with many conditions, have not changed urban form to a significant extent. This paper reports on the development of the 'Tiny House Planning Resource for Australia, 2017'; a collaborative report by academics and planning and other professional consultants. The Tiny House Resource aims to assist planners, policy makers and the wider community to better understand the emerging Tiny House movement within Australia and explores the model's potential to contribute to greater choice in housing supply and diversity. This paper concludes that tiny houses have a significant potential to be a catalyst for infill development, in the 'missing middle', either as tiny house villages, or by relaxing planning schemes to allow both homeowners and tenants to situate well-designed tiny houses on suburban lots.
Walking for Recreation: An Innovative Method to Create a Small-Scale Raster-Based Walkability Index

A majority of adult Australians do not get the recommended minimum 30 minutes of exercise per day, contributing in part to increasing levels of obesity, type 2 diabetes and cardiovascular disease. One of the most accessible and popular forms of exercise is walking, which requires little if any equipment, and can be practised almost anywhere. Many researchers have investigated walking for transport, for example, creating GIS-based walkability indices, often based on the core variables of junction connectivity, residential density and land-use mix.

Walking for recreation however is a lesser studied aspect of walkability; and arguably, the decision to walk for exercise is based on a different set of factors than walking to access retail, employment or public transport. This study created an innovative, small scale (5m²) raster based walkability index, taking into account variables such as slope and access to parks, waterways and fitness destinations. It used ArcGIS Network Analysis to create service areas to various point-based destinations, and from the centroids of Mesh Blocks. It also added cost attributes to a detailed road and footpath network; for example, a pedestrian only track received the highest weighting, a busy road received the lowest, and highways were prohibited.

This surface can be examined even at household level and aggregated to any spatial scale, for analysis against socio-economic and demographic variables. This index was significantly correlated with one created at SA1 scale that used the three common walkability index variables; and the raster index was significantly correlated with the SEIFA indices. Further iterations of the study will ground-truth the index, and incorporate results from the 2016 Census and travel survey data. A knowledge of the small scale spatial and infrastructure variables that foster more walking for exercise could be of great benefit to planners, city managers, architects and designers.
Ms Robin Simpson  
Urban Design Adviser, RSDL

**What Will Win Over the New Spaces; Creativity and Livability?**

As pressure for density increases, opportunities for amenities which attract creative individuals and innovative business are under pressure. Will technology driven disruptions and transport delivered as services provide spaces where all the "good bits" can flourish?

It is clear that Cities are being increasingly disrupted; who will win if spatial needs of streets and roads change? Cities compete for talent and those which are best at recognising and responding to the disruptors (be those social, economic, physical or technological) are likely to win (M. Coetze). What role does the public domain of cities play in keeping cities competitive by attracting creative individuals and innovative businesses?


In a scenario of reduced individual car ownership enabled by driverless vehicles, the future transport service providers, etc. space in both the public and private domains will be freed up. Cities offer quality environments that look good, feel good and are perceived as safe and where connectivity enables people to come together through co-located facilities and networks of routes and spaces.

This paper explores this territory and how new streets can draw in the creative individuals and play an active role in fostering innovation by becoming high amenity, equitable environments. How can the release of space in the public domain be re-engaged to contribute positively to smarter more livable cities that compete on the regional and global stage?
Mr Peter Skinner  
Head of Research, Architectus Brisbane

**Avoiding a Massing Muddle - Towards Better Infill Housing in Queensland**

States have focussed on issues of housing density, diversity and affordability in our middle-ring suburbs - 'The Missing Middle' - through design competitions and refinement of housing design guidelines. The draft Queensland Housing Code (QHC) purports to introduce 'up-to-date siting and design rules that reflect emerging best practice for dwelling house development'. QHC aims to standardise state-wide requirements, but demonstrates little attempt to co-ordinate with interstate standards like the concurrent draft NSW Medium Density Design Guide (MDDG). Comparative modelling of the requirements of these two documents shows that allowable QHC building envelopes may be on average 55% larger than those allowed by the MDDG and significantly larger than the current Queensland house, even on the smaller lots. This permissible massing is achieved by sacrificing private outdoor space, building-to-building separation, privacy from inter-looking and suburban tree cover. It is argued these are muddled priorities in subtropical Queensland and this paper recommends twelve changes to the draft QHC.

Queensland’s 'Density and Diversity Done Well' design competition provides an opportunity to illustrate these critical recommendations through creative design proposals. Most radical is the proposal to allow residents to centralise required car parking in neighbourhood parking structures. The design submission demonstrates how relocating private garages liberates the ground floor of small footprint terrace houses. It improves universal access and opportunities for ageing in place, and supports home offices and entrepreneurial endeavours. Removing driveways releases quality yard space for gardens and recreational uses. Eliminating crossovers creates safe continuous footpaths and simpler on-street parking. Corralling the private cars is shown as the key to creating lively, walkable and sustainable neighbourhoods. The DDDW submission shows that provision of distributed neighbourhood car parks and the utilisation of efficient prefabricated construction systems can be the catalyst for small-scale, block-by-block redevelopment of our currently under-appreciated low-density, middle-ring post-war suburbs.
Mr Malcolm Snow
Chief Executive, National Capital Authority

Inner-City Renewal - The Do's and Don'ts for Achieving Successful Place Outcomes

In summary, my presentation will first set the context for the rise of renewal as an urban policy priority. I'll then describe what has been influential in shaping how urban renewal is being done in Australian cities and what's already being achieved by referencing case study projects. The factors that I believe will determine the success of the urban renewal push will be described with the thought these may have universal relevance to the centres of other cities.

How our cities continue to perform not just as economies but as places that support all of the other dimensions of liveability will be critical. We live in an age where technology has trumped the tyranny of distance and place no longer matters or at least that's what many people seem to think. In fact the opposite is occurring - place is becoming more important as the world's economies are transformed by knowledge-intensive activities. Place matters for both prosperity and liveability and for Australia - one of the world's most urbanized countries - that means we need to reconsider the purpose of place.

Despite this strategic imperative I contend city planning in Australia is still primarily concerned with the management of the physical environment and only secondarily with the people who use those environments. This sets a stark backdrop for the way our cities have historically been planned, developed and governed. In combination, these are also the underlying reasons for an overdue change in the pattern of our urban settlement from predominantly the outer fringe back to the inner-city - a shift which in part, is redressing the current imbalance against cultural, social and environmental imperatives which deserve equal policy attention.

As a result of a more favourable feasibility equation and a shift in urban policy priorities from the greenfield to the brownfield, renewal is increasingly being used to inject new life and stimulate new possibilities into worn out city districts. A key factor in its appeal to government is that measuring the before and after conditions against liveability criteria is an easier task than measuring incremental change across the entire city.

The public and private sectors and the consultants advising them, are enthusiastically responding to the challenge of remaking our city centres, particularly in those cities where suitable land in public ownership is available. Proof of this can be found in the rise of the special purpose urban renewal agencies which have been established by virtually all state governments to deliver on their election promises. In their very different spatial and political contexts these agencies have been given responsibility for transforming some of our central cities most under-utilized precincts. Their common remit is to re-make place but to do it in a way that both strengthens community and equitably distributes the benefits.
Referencing and illustrating my case study projects in different states
I’ll describe the place DNA these geographically diverse locations share and the common urban
design principles and approaches the agencies responsible for them have applied that has enabled
them to realize their renewal vision. Six factors stand out in my view:
- recognition of the importance of taking a long-term perspective;
- a willingness to invest in good design and the creation of a high quality public
  environment;
- a commitment to not just designing and building high quality environments but also to
  ensuring those environments work well once the construction is finished
- building organizational capacity, or to be more explicit, the task of aligning the business
  of renewing urban places to ensure it is results-oriented;
- active and transparent engagement and recognition that successful urban renewal is
  achieved through effective community partnerships; and finally
- the creation of shared value.
Mr Edward Sullivan  
Adjunct Professor of Urban Studies and Planning, Portland State University

**Meeting the Disruption Of The "Hot" Housing Market: Some Thoughts from North America**

Those public and private housing market participants affected by the headaches experienced by Sydney and other places in Australia that have a "hot" housing market might commiserate with their North American colleagues from Vancouver B.C., San Francisco and Manhattan. We North Americans have not "solved" this problem, but may have some techniques to share that Australians might consider. Our issues of race, class and income exacerbate our housing problems and are often expressed in terms of design compatibility and infrastructure sufficiency, which may mask exclusionary motives.

One major phenomenon involves ever-increasing land values and stagnating wages. Property taxes (rates) rise but older people want to stay in their homes, making way for the "Airbnb" phenomenon, in which houses stay off the market and do not provide additional housing choices. Short-term rental control is thus necessary; moreover, the urge of overseas investors to buy (but not use) housing can be met with "empty house" taxes, as that in Vancouver, B.C. Property taxes can be adjusted to reflect the potential value of land, instead of its current use, encouraging property owners to increase density.

Other problems relate to gentrification and homelessness. Solutions include use of accessory dwellings, shared housing, micro housing, outright increased density on corner lots, discretionary approvals for increased density, use of neighborhood plans and historic districts, reduced parking requirements, inclusionary zoning, federal Affirmatively Favoring Fair Housing enforcement, targeting segments of homeless populations - veterans, the mentally ill, drug and alcohol abusers - for specific resolution.

In the end, it may be economics that brings about change, for the delta between single family housing prices and average wages will force many to choose other housing options. When that happens, cities must have thoughtful responses.
Mrs Kayalvizhi Sundarraj Chandrasekar  
PhD Candidate, Bond University

**Smart Design Interventions - A Way to Achieve Better Urban Design Outcome for Indian Cities**

Town and urban planning in India has its roots from Mohenjo-Daro and Harappan Valley ancient civilizations, with Fatehpur Sikri and Shahjahanabad being earliest examples of planned cities. Post-independence, cities like Chandigarh, Ahmedabad, and Bhubaneshwar were planned as new state capitals. Despite these precedents, urban design in modern India is more an afterthought than a conscious decision for a functional and aesthetic outcome.

In this context, the paper analyses one of India's recent ambitions - to transform one hundred cities across the nation into smart cities by retrofitting existing urban centers across the country, within the next two decades. India's Smart Cities Mission (SCM) launched in 2015 intends to provide an enforceable mandate to redevelop its existing cities and free them from the shackles of chronic infrastructure deficiencies along with social, environmental and governance issues.

The mission document clearly identifies the need for individual city governments to choose specific area based and pan city developments, based on self-analysis, consultant recommendations, and public-participation. The focus of this paper is therefore to understand the proposals put forth by the first twenty cities selected under SCM and analyze in detail on the importance of urban design related 'smart' interventions proposed by various cities, on their journey to become a smart city.
Why a water sensitive city, and what are we doing about it?

Many cities and towns in Australia and around the world face three critical challenges in managing water, and ultimately people's quality of life:

- a rapidly growing population;
- a changing and highly variable climate; and
- a challenging economic environment.

Population growth means development is necessary, resulting in dramatic alterations to the natural landscape: vegetation and soil are replaced with hard, impervious surfaces and buildings, along with increasing pressure on limited water resources. This leads to unique urban environments, quite different from surrounding natural environments. The common results: an increase in air and water pollution, degraded waterways, and higher air temperatures.

Climate change is forecast to result in more extreme weather events such as floods, heatwaves, bushfires, increasing periods of drought, and more frequent and intense storms. Urban development and urban water systems need to be resilient enough to deal with these "shocks". Lastly, a tightening economic climate favours a focus on cost saving and increased efficiency, achieved through micro-economic reform. Ecosystem costs are rarely counted and better frameworks for cost benefit assessment are needed.

The Cooperative Research Centre for Water Sensitive Cities (CRCWSC) was established in July 2012 to help change the way we design, build and manage our cities and towns by valuing the contribution water makes to economic development and growth, our quality of life, and the ecosystems of which cities are a part.

The CRCWSC is an Australian research centre that brings together many disciplines, world-renowned experts, and industry thought leaders who want to revolutionise urban water management in Australia and overseas.

This paper will present some of the research completed and ongoing, tools and processes already developed to start to deal with these issues and examples of how work 'on the ground' is already emerging.
Mr Waco Tao  
Founder & CEO, PowerHouse Homes

**Agile Housing Model for Future Proofing: Prefabrication to Perfection**

We all live with modular designs. And, we live in a modular world.

Cars, furniture and even airplanes are comprised of modular elements, which are characteristic of mass production manufacturing. When it comes to our homes modularity is evidenced in the accessories attached to the body of our houses such as fittings and fixtures, but rarely is the body itself a module. There are logistical challenges that mitigate against pre-fabrication of houses. Size in particular is a major constraint.

But, as the solution applied for Karatha that demonstrates, size is not an insurmountable problem. Nor is variety.

Like many other modules based objectives, the simple solution is to break the whole down into transportable sections each with a specific function or group of functions, which can then be reformed organically as a whole. Modules of controlled size can be assembled in such a way that a building can function as seamlessly as a conventionally conceived and built house.

Preference for the level of accommodation can also be achieved by combining modules with specific amenity often in logical related function groupings. When real choice is combined with the accuracy. Speed and cost effectiveness of modular factory assured construction then the element of 'prefab' housing that lead to appeals - the 'one-solution-fits-all' assumption - no longer applies.

The houses presented here are informed in their solution by professional attention and skill applied to interiors, energy and sustainability and an architectural attitude that regards modularity as a technique in the service of conventional aspirations. When engineered efficiency, which lies at the heart of modular fabrication, is processed architecturally it becomes strongly identified with culturally determined preferences.

An optimised habitat that enshrines the idea of domesticity is the result.

My presentation focuses on and addresses three key areas that modular building industry is facing today as challenges:

1. How to maximise space using available modular building methodology.
2. Reviewing cutting edge design potentials for modern modular housing.
3. Facade engineering for modular building projects.
CASE STUDY: Kararha Housing Development, Western Australia

BEYOND THE CONFERENCE

This presentation is intended to tease the minds of those in and out of the modular building industry in such a way that 'thinking inside a box' could have the better effect than 'thinking outside the box'. The real challenges ahead should be dealt with way beyond the modular designs for functional and aesthetic results.

Housing today does neither reflect the true needs of people nor respond to the environment we live in. Family life cycle and housing life cycle need to work hand-in-hand to reduce carbon footprint and make the world a greener place to habitat and enjoy.

My presentation addresses key challenges that the housing industry is facing today and focuses on Agile housing model which attempts to address the challenges with both conviction and strategies for execution.
Dr Silvia Tavares
Lecturer in Urban Design, James Cook University

*Urban Climate Adaptation through Design and Planning: A New Zealand Perspective*

Urbanization is one of the twenty-first century's most transformative trends, and increasing urban population along with the impacts of climate change provide new challenges and new opportunities. However, there are significant differences in the way countries are perceiving the phenomenon of climate change and implementing adaptation strategies to improve urban climate. This paper reports on a study carried out in New Zealand and aimed at identifying how the country is implementing adaptation strategies through urban design and planning to improve urban climate in the face of climate change. Semi-structured interviews were conducted with New Zealand scholars studying urban climate related issues, urban design and planning practitioners, and governance. The study was designed to provide a wide range of perceptions rather than a set number of interviews in specific cities. The semi-structured interviews focused upon awareness of the need for climate change adaptation, existing urban climate phenomena as a consequence of design decisions, existing design strategies to improve climate adaptation, communication of climate change issues, existing policy instruments and implementation of initiatives.

The paper discusses the perceptions of interviewees regarding awareness and urgency of action; the role of citizens, governance, and urban designers and planners in the urban climate adaptation agenda; and the role of dramatic events such as the Christchurch earthquakes on acknowledging the need for appropriate design and planning. Results indicate that the geographical condition of New Zealand and its consequent maritime climate means that climate change - particularly effects related to city design - are not seen as a major issue. However, the recent Christchurch earthquakes have sped up the processes of change, making citizens and governance more aware of consequences of inappropriate design and planning.
The Living Knowledge Stream - Greater Curtin Masterplan

The Living Knowledge Stream (The Stream) design guidance document is a groundbreaking guideline for major green infrastructure and Indigenous cultural trail network for Curtin University’s Bentley campus (116 ha) in Perth, Western Australia. The Stream is a composite of multiple functional and structural ecological elements, rooted in the character of the site, its people and their connection to water past and present, creating a communal vision for the future.

In a collaborative process Syrinx Environmental with Elder Dr Noel Nannup and Sync 7, carried out cross disciplinary integrated research. This process aimed to test whether or not a design method predominantly led by interrogating historical and present day natural ecology combined with traditional ecological knowledge could generate a unified, logical and modern interpretive design framework to guide future development across campus.

The Stream aligns with two important Whadjuk Nyoongar Songlines which trace the original paleochannels, springs, wetlands and shallow groundwater. These Songlines were mapped, and research was undertaken to compile the data needed to build the different layers of influence, including local geological, stratigraphic and vegetation data. These layers were used to generate site-specific design and interpretive responses at key locations, leading to an extensive research document and interpretive design guidelines.

In addition to the cultural interpretation, The Stream’s infrastructural system replaces the conventional stormwater (pit and pipe) drainage infrastructure within an open green waterway network. The Stream is envisaged as a fully integrated system weaving through its natural and, built environments, reconnecting the historical wetland and paleochannel and cultural (indigenous) storylines that follow these key ecological linkages.

The strategic objective of this project for Curtin University is the creation of a multi-functional outdoor living and learning laboratory. This Infrastructure underpins the ‘new’ campus, named Greater Curtin which will develop into a specialised mixed use activity centre for Perth.
Mr Murray West  
Transport Engineer, MRCagney

**Link and Place' and Other Token Gestures**

Link and place' is a design rationale founded on the recognition that streets return value to the public as essential stages for public life that contribute deeply to healthy, social and prosperous communities - as well as conduits for moving people and things.

'Link and Place: A guide to street planning and design' (Jones et al, 2007) provides a thorough street design methodology centred around a street classification matrix that seeks to resolve these competing 'place' and 'link' functions. While several subsequent incarnations of the theory have been presented since, all retain a similar expression of this 'link and place' street classification matrix.

This presentation will argue that an inherent flaw exists in the evaluation of place value in these expressions of 'link and place'. That is, by evaluating the place value of streets in a citywide (or sometimes national) context, contemporary 'link and place' expressions simply assign higher place value to places that attract more people. While seemingly a sound rationale, such a superficial evaluation of place value does not consider the full breadth of ways people use street space, and the relative importance of these uses and behaviours in enriching the lives of the people spending time in the street. Most crucially, this methodology marginalises the place value of local residential streets.

This presentation will propose an alternative expression of link and place that evaluates place value based on the extent street environments support the broad set of behaviours, uses and characteristics valued by the people who spend time there.
Due to the wide range of application areas, the safety area must also be implemented accordingly. With LCT – safety, you are opening up a whole new kind of traffic safety. For both pedestrians and road users. By the very flat exciting and not dazzling light, a new generation of traffic safety is guaranteed.

Of course the glow of the traffic is controlled with the corresponding pedestrian lights. It is also possible to implement a complete unit with photovoltaic and storage medium for smooth operation in the evening hours with an energy-saving mode.

- Smart City Technology
- Integrated Lighting Systems

For example, deck elements
This product combines the industrial production of elemental ceilings and a lighting unit, which is installed on a level surface. All lighting units are RGB-capable and reversible. This product is especially at home in areas where room height plays an important role and where lighting is used as a safety guideline.

Obviously, the architectural aspect comes to have an integrated light that is not visible when it is switched off. This product can also be used for in-situ concrete ceilings.

Light on Demand – How the road lighting of Smart Paving is revolutionized!

Normal street lighting is usually switched on throughout the night. This is associated with a lot of energy consumption and produces an enormous amount of light pollution in cities.
The LightStone revolutionizes this by the possibility to illuminate the streets only on demand! This increases safety and reduces energy costs for cities.

As an example, at night, the walkway is illuminated by means of motion detectors 100 meters in front and 100 meters after a pedestrian. This could be done with Smart Paving’s Street Lights are usually turned on during the entire night using lot of energy and producing an enormous amount of Light Pollution in Cities. The LightStone is revolutionizing this by lighting streets only on demand, increases safety and reduces energy costs for cities. Just see how this will be solved by Smart Paving’s.
Dr Caroline Stalker  
Australasian Design Director (Urban), Principal, Arup

**Envisioning Coastal Resilience: The Design Dimension**

Globally, coastal cities are at the coalface of climate change impacts. According to UN Habitat, major coastal cities are under significant threat, as sea level rise, storm surges, heat waves and wilder weather impact on infrastructure and access to basic urban services and quality of life. Australia is a coast-hugging nation, with around 85% of Australians live in the coastal zone. The City of Gold Coast is clearly a case in point, with the GC’s vulnerability identified in the Gold Coast Climate Change Strategy 2009-2014.

Our team is interested in how the ‘(resilient city) rubber hits the road’ in terms of actual urban places. To help us, we looked to the Arup City Resilience Index, launched in 2016. This tool assists cities to assess their own vulnerabilities and find solutions uniquely tailored to their circumstances. The city index highlights key dimensions across health and well-being, economy and society, infrastructure and environment, and leadership and strategy.

To provoke thinking and discussion on this issue, our team undertook a design charrette focusing on the Biggera Waters/Runaway Bay area, as a laboratory of ideas to help us understand how urban design could help to deliver the City’s objectives of ‘creating liveable places, making modern centres; strengthening and diversifying the economy; improving transport outcomes; living with nature; and creating a safe, well designed city’ through the lens of designing for resilience. The key strategies that emerged were designing for social connections, redundancy as a resource and catalytic infrastructure integration.

This paper will discuss the Climate Resilience Index and, as provocation for further debate, urban design ideas for a resilient Coolloongatta.
Mr Kevin Carrucan  
Principal, Architectus  

Design Integration; Customer Centred Design, Place Making and Urban Design  

The presentation will discuss the themes of metro and transport projects and the city building impacts and place making opportunities they present. The importance of design for place will be demonstrated. Referring to recent and current project examples, the capacity for bringing communities closer together and creating more connected cities will be explored. The growing importance of customer focused design, providing a positive environmental impact, public domain uplift and easy to use, customer centred urban design will also be discussed.
**Mr Luke Brannelly**  
Managing Director, V2i Group

Co-authors:  
Mr Riccardo Geppert, Business Development, V2i Group

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**A new era of technology disruption: Transforming the planning, design and approval processes through the use of interactive virtual environments and tailored business tools, with the potential to save the industry millions of dollars**

This presentation aims to introduce the audience to examples of how some of the country's leading developers have embraced disruptive, cost-effective and easy-to-use interactive virtual environments and their potential for significant transformation across the planning and approval processes. In recent years, emerging virtual environments and Virtual Reality applications have been progressing towards a wide variety of functions across several industries, as the economic viability increases along a trajectory that sees these technological innovations enter the mainstream. Within our industry, entities proven to benefit from these solutions include property developers, community stakeholders, as well as government authorities.

This visually engaging presentation will provide real world examples by demonstrating the application of these interactive and tailored software tools at various stages of the project lifecycle. It will showcase the economic and outcome related benefits of these solutions and detail how these are fundamentally based upon the principles of visual literacy and a common visual language across all stakeholders, i.e., our ability to intuitively understand visually presented information, and virtual collaboration, i.e., the ability to cooperate within a virtual environment across distances and time zones.

In conclusion, dedicated software applications not only serve to facilitate the communication of outcomes to stakeholders, but also assist to significantly cut red tape and lead to an acceleration of the decision-making and approval processes. These novel solutions are now driving a drastically improved understanding of complex information for experts and laymen alike, leading to more informed discussions and hence decision-making, and the corresponding improvement of business efficiencies and the reduction of operational costs, as well as unprecedented levels of data intelligence that allow for new insights and the evaluation of key performance indicators. The appropriate use of these technologies promises a solution to longstanding industry shortcomings, and contributes to the competitiveness of early adopters.
**The high life: Could apartment design policy build healthier housing?**

Introduction: Higher density residential developments are being built across Australian cities to achieve population growth and sustainability targets. However, apartments in each state are guided by different policy requirements, and some are more comprehensive than others. We examined apartment design policy in Australia and compared it to the health evidence to identify whether policy and evidence align - that is, are we building healthy higher density?

Methods: The review was structured around seven design themes identified as important to health: daylight/sunlight; natural ventilation; thermal comfort; internal space; outdoor space; outlook and acoustic privacy. The policy review examined state apartment design codes, and extracted the requirements that related to each design theme. The literature review included English language peer reviewed papers (n=31) (2005-2015) that addressed a design theme and a health outcome in a high density setting.

Results: There was strong evidence linking natural ventilation and thermal comfort with health; consistent evidence associating access to sunlight and acoustic privacy with health, but relatively limited evidence that outlook and space impact on health. The counterpoint to this was that apartment design policy across Australia generally provided less guidance on natural ventilation, thermal comfort, sunlight, and acoustic privacy (where the health evidence was stronger), but more comprehensive guidance on space and outlook (where the health evidence was limited).

Conclusion: Apartment design policies are generally not empirically derived or evidence-based, but tend to be based on practice and professional opinion. Conversely, no health studies appear to design their research with the intention of measuring and analysing the impact of the specific design requirements (or standards) that shaped their apartment stock. This is important, given rapid urbanisation, and increasing densification of cities. Future research should address the policy-evidence mismatch by testing whether the implementation of design policy requirements can promote residents' health and wellbeing.
On the Urban Earthquake Shelter Planning Using Central Places Theory and Voronoi Diagram

Earthquake is one of the most major urban disasters. Urban earthquake shelter planning is an important method which can mitigate the earthquake loss effectively. The principles and requirements of urban earthquake shelter planning are popular in China, but the study of planning methods and spatial layout is lack. First we study the assumption terms, the key concepts, and the three principles oriented of the central place system. And we use it as the guiding ideology and prototype theory of urban earthquake shelter. Then the Voronoi diagram as a method is used to build the model which accord to the shelter spatial layout and the divided service zoning about the urban earthquake planning.

That constructions a planning system which the urban earthquake shelter and the urban refuge living area are hierarchical based on the case of Shenzhen, China. As urban earthquake shelter is hierarchical, it is divided into four ranks from high to low which are the central shelter, the zone shelter, the block shelter, the neighborhood shelter.

The different rank urban earthquake shelters have the relative scales and functions, so it can serve the relative population, radius, and area. There are two principles which are confirmed according to the assumption terms of the central place system: the principle of equality and the principle of accessibility. The principle of equality is based on the market oriented layout way of the central place. The number of the low hierarchical refuge shelters is three times as much the higher hierarchical refuge shelters. That constructs an equitable method which layouts the different ranks urban earthquake shelter. Accessibility is a degree that the people from origin to urban earthquake shelter at different sites in the city.

The principle of accessibility is utilized to confirm the service extent of the urban earthquake shelter. And the hierarchical urban refuge living area is formed. Finally we use the hierarchical Voronoi diagram to build the hierarchy and the service extend of the urban earthquake shelter. And it constructs the hierarchical service system of the shelter, and develops the living service area for mitigating disaster.
Dr Jung Eun Kang
Professor, Pusan National University

**Effects of compact spatial characteristics on the urban thermal environment**

Urban temperatures are getting higher and expected to accelerate in the future with climate change in Korea. The urban thermal environment is affected by urban spatial characteristics such as land use, impervious surface, spatial structures, open space, building structure etc. Little empirical research has examined the relationship between spatial characteristics and the urban thermal environment in Korea.

Thus, this study analyzed the impact of compact urban spatial characteristics on the urban thermal environment. Compact urban spatial characteristics were measured according to six indicators, namely population size, population density, concentration, clustering, land use mix, and green space. In addition, the analysis models considered impervious surface area and wind speed as control variables.

The results of the panel analysis of 68 cities from 2005 to 2013 indicated that high population density and impervious surface area considerably increased the heat index. The concentration and clustering of development demonstrated different effects on the urban thermal environment in Korea. Concentrated and clustered development in the urban center had both negative and positive effects on the urban thermal environment. Furthermore, low-density development in areas outside the center reduced urban heat; however, low-clustered development showing leapfrog high-rise buildings exacerbated the urban thermal environment. In addition, increasing wind speed reduced the heat.

The findings suggest that a compact urban form with high-density development in the center and relatively low-density development outside the center is better. Green space, a pervious surface, and the wind path must be more seriously considered in urban planning and design for the urban thermal environment.
Mr Sang-hyeok Lee  
Ph.D. Student, Pusan National University

Co-authors:  
Prof Jung Eun Kang, professor, Pusan National University  
Ms Yee Rim Jung, student, Pusan National University

**Urban Flood Vulnerability and Risk Assessment for Application in Urban Planning**

Floods, which are a frequently occurring natural disaster in Korea, need to be considered in urban planning process such as land use, infrastructure and open space planning for effective disaster mitigation. Recently, Korean government introduced the climate change vulnerability assessment in the urban planning process. However, many planners have experienced difficulties and problems in the assessment methodology suggested by the government.

Thus, this study is to improve and diversify the disaster assessment by conducting and comparing two different methodologies: a flood vulnerability assessment, in accordance with the manual suggested by the government, and a probabilistic flood risk assessment emphasized in IPCC 5th assessment report.

Vulnerability assessment is based on the indicator method and the indicators to measure flood vulnerability were selected in accordance with the government manual. Risk assessment which is a product of the probability of occurrence and its effect, has benefits of considering uncertainty and useful for decision making. Among various methodologies for risk assessment, this study used the probabilistic assessment using Markov Chain Monte Carlo (MCMC) simulation, one of the probabilistic methods in Bayesian inference, which is effective in random number generation and learning. The final risk was calculated focused on casualties and property damage.

When these assessment results were compared, the entire risk area of Busan City in the vulnerability assessment was found to be twice as big as that in the risk assessment. The risk area derived from the risk assessment, however, overlapped more with the actual flood area than the risk area derived from the vulnerability assessment, demonstrating that its accuracy and usefulness were higher than those of the vulnerability assessment. Because the risk assessment could lead to a more advanced spatial analysis and could be quantitatively verified, it could improve existing flood assessments and contribute to decision making to establish safer cities.
Ms Gigi Lombardi  
Landscape Architect, Randwick City Council

Co-authors:  
Mrs Stella Agagiotis, Coordinator Strategic Planning, Randwick City Council

**Living the Green: A Symposium on Green Roofs and Walls**

Population growth, rapid urbanisation and climate change are transforming our environment requiring new ways of thinking to make our cities greener, healthier and more liveable. Cities around the world are recognising the value of living infrastructure as an appealing way of mitigating climate change by adding to the urban forest and providing localised cooling, while utilising very little space on the ground.

The take up of living infrastructure is gaining momentum across Australia as the environmental, socio economic and design specific benefits of integrating green roofs, walls and facades into development are being realised. Projects such as One Central Park in Sydney, to small scale roof top projects are leading the way in improving the environmental, liveability and aesthetic quality of our urban environment, while creating greater awareness about green technologies.

The Living the Green Symposium, a first for Randwick City Council, brought together leading designers, researchers and policy advocates from across Australia to share knowledge and expertise on stand out projects and to participate in discussions on key issues and challenges from a planning, design and maintenance perspective.

The Symposium comprised a series of presentations covering award winning development, the latest cutting edge research on ‘breathing wall’ technologies, and best practice initiatives emerging from Australian cities. A panel discussion sparked open dialogue and debate about how government can better support the provision of living infrastructure in our cities.

The Symposium was successful in raising awareness and in garnering ideas to inform a policy on Living Infrastructure for Randwick City. Importantly, the Symposium helped signal to industry that Council is proactive in supporting the delivery of living infrastructure to help mitigate climate change and improve amenity and the aesthetic quality of our City.
Using Climatic Maps to Assess the Development of Shenzhen Low Carbon Eco-City

In order to achieve a sustainably developing goal, Shenzhen is considering building an international low-carbon eco-city in the Ping Di area, in which a climatic issue has to be taken into account. A key point is to use urban climatic analysis maps to aid planners at focusing urban thermal comfort and energy saving when designing Shenzhen International Low-carbon Eco-city (SILE) at a planning stage. Climatic analysis maps can express the area’s thermal characteristics, and also be transformed into the planning process. It is considered that urban climatic maps are feasible tools to make a correct decision corresponding to current micro climatic situations. In this study, climatic analysis maps synthesized urban morphology and geographic topology and wind condition within the urban canopy layer are made to present thermal effects of the present SILE.

An environmental response to various urban morphologies based on wind and thermal loads are explored in climatic environmental evaluation for decreasing anthropogenic heat release and air ventilation at the pedestrian level. It is expected that through this study, the design process could be monitored in somehow for largely achieving low-carbon emissions and reaching an ecological developing goal.

Keywords: Shenzhen low-carbon eco-city, Climatic map, Evaluation, Planning recommendation
Applying Lessons Learned In Implementing Satellite Cities Within the Mega Cities Of Tokyo And Delhi, to the City of Melbourne

Megacities are classified as "urban areas with a population of over 10 million", the two largest megacities in the world currently, are Tokyo (with a population of 32 million) and Delhi (with a population of 25 million), both cities have made use of satellite cities to reduce the negative impacts associated with large populations.

In the Melbourne 2030 plan, the population of Melbourne in 13 years is expected to be 5 million citizens and in 2050 is expected to be over 8 million.

My poster will analyse the use of satellite cities in Tokyo and Delhi, to counter the negative impacts brought about by having such a large population, including congestion, pollution, sprawl, public transport issues and others. It will look into the methods which planners within the two megacities have implemented the concept throughout history, up to now. I will also analyse times when the satellite city theory did not work as planned and the reasons for the failures, such as economic or public perception influences.

After summerising the lessons learned from the successes and failures of Tokyo and Delhi’s satellite cities, the conclusion will consist of the application of these lessons into the Melbourne urban context. The city was chosen as it is already experiencing the negative impacts of population growth, at only 1 million citizens. The use of Satellite cities will allow the city to be more efficient when the projected population of 8 million citizens is reached.

To assist in the examination the poster will make use of maps, graphs and photographic images.