Climate Smart Precincts

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The Climate Group

Adelaide Workshop Report

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The following companies participated in this workshop:

ARUP  


Disclaimer: the companies associated with this work have contributed to this document, but do not necessarily endorse all content contained within.
Foreword

Achieving carbon emissions reductions to meet national, state and territory and local government commitments, together with the long-term goal of securing a safe climate, will require the transformation of our social, economic and built systems. The scale and urgency of the challenge required over the next few decades is immense, and will increasingly be focused in our cities. Australia’s cities are responsible for 80 per cent of our national emissions and are extremely vulnerable to adverse impacts of climate change. Many are growing at an unprecedented rate, with projected population increases over the coming decades imposing significant pressures on physical and social infrastructure.

New and deeper forms of collaboration between government, business and communities hold the potential to drive innovation and action at the pace we need. We must find new ways to plan and roll out smarter, interconnected systems and technologies that reduce the carbon footprint of our cities and enhance their resilience to climate change impacts. But beyond addressing our vulnerabilities, we must see the multiple opportunities and benefits to the public and private sectors, and to the broader community, from a proactive approach to designing sustainable urban spaces. Well designed and executed sustainable cities can attract the international investment, entrepreneurial businesses, innovative technologies and green jobs that will underpin their future growth, prosperity and wellbeing.

Precincts are a microcosm of city-wide urban development. Precinct-level development affords an opportunity to test the “systems thinking” needed to better understand the many and varied interactions between the infrastructure and systems that underpin urban life: housing, transport, energy, water supply, managing resources and waste. But far beyond this (and sometimes forgotten) are the social networks necessary for wellbeing and community identity.

This thinking gave rise to the concept of the Climate Smart Precinct.

A Climate Smart Precinct will not just have a lower impact on the climate and be more resilient to climate change - it will also be a better place to live and work in. It will be a more cost-effective development option, inspiring for technology partners, compelling to forward-thinking business tenants, and attractive to Australian and international investors. It will be cheaper to live in and a place where it is easier to make sustainable choices that are consistent with quality of life.

Our aim is to ensure that climate smart urban design is the baseline requirement of policy makers, regulators and planners, the “default” option for public and private property developers, and the first choice for residents, commercial enterprises, investors and communities throughout Australia.

Much work has been done over the past two years to develop the Climate Smart Precincts initiative, including the development of an Opportunities Report in July 2010. This produced a set of priorities for collaboration between public and private sectors, together with a draft list of desirable attributes of Climate Smart Precincts.

South Australia is the first State Government to present real-world flagship projects for discussion by business members of the Climate Smart Precincts Initiative. In February 2011, The Climate Group and the South Australian Government jointly ran two workshops, hosted by the Land Management Corporation (LMC) and The Department of Trade and Economic Development (DTED), examining participants’ responses to Bowden Village and Tonsley Park as potential Climate Smart Precincts.

The businesses involved in the workshops were Arup, Delfin Land Lease, GE, IBM, Johnson Controls and Origin Energy. The geographic and sectoral reach of the private sector participants is significant and combines practical implementation expertise across many areas in local, national and international projects. The Green Building Council of Australia and the Monash Sustainability Institute provided important insights from a not-for-profit and academic perspective. Representatives from Sustainability Victoria also attended, sharing relevant experiences and research, and promoting inter-government exchange of best practice. The presence of South Australia’s Integrated Design Commissioner helped to pull the aspirations for the sites together with overarching policy and best practice in Australia and globally.

Participants identified specific opportunities presented by the Bowden Village and Tonsley Park sites and posed some suggestions for LMC and DTED, as the precinct owners and developers, to consider. Their comments and ideas will also inform the future development of Climate Smart Precincts – both conceptually and in our projects elsewhere in Australia and beyond.

This report provides an overview of the discussions during the site visits and the workshops, summarising participants’ observations, insights, suggestions and relevant case studies cited.

I was inspired and invigorated to experience the level of enthusiasm and engagement generated in the workshop discussions. The representatives of LMC and DTED sought to understand the drivers for business involvement in large-scale, leading edge sustainability developments, while private sector participants were energised by the possibilities for both Bowden Village and Tonsley Park. It was clearly evident at the end of two days’ dialogue that South Australia is well positioned to build on its strong existing sustainability platform to be a national, and even international, leader in developing Climate Smart Precincts.

Both Bowden Village and Tonsley Park could readily be branded as Climate Smart Precincts. Due to its size, existing features and the early stage of its development, Tonsley Park in particular has the potential to become a world-class centre for sustainable design innovation at an unprecedented scale in Australia, with huge potential for replication in residential, commercial and industrial developments around the country. At this stage, a Climate Smart Precincts approach could assist the LMC and DTED to leverage a raft of leading edge resources and ideas from around the world.

However, it is important to note that a Climate Smart Precinct is still an evolving concept. A broad range of new models are required and a long term view must be taken, meaning that traditional approaches to assessing value and making the business case need to change. There are opportunities to explore a range of new models across the spectrum of financing, investment attraction, governance and risk, community engagement, planning, design and performance evaluation. Indeed, Climate Smart Precincts can help inform the way that South Australia (and other states) approaches investment and job creation.

The Climate Group is delighted to have facilitated the initiative as a whole, as well as the South Australian workshops. The development of Climate Smart Precincts is very much aligned with our mission to accelerate the growth of a global low carbon economy - to promote a clean industrial revolution that will unleash a new wave of market transformation, economic growth and job creation.

I am privileged to present this report to the South Australian Government. It represents constructive cross-sector, multi-disciplinary dialogue in response to two important South Australian precinct developments. I thank the South Australian Government for hosting the discussions and all of the workshop participants for the thought leadership reflected in this document.

Caroline Bayliss
Australia Director
The Climate Group

Participants' responses to Bowden Village and Tonsley Park as potential Climate smart precincts.
Introduction

Over the coming decades, cities in Australia and around the world will be facing the challenge of reducing emissions whilst at the same time accommodating population growth and responding to the threats of a changing climate. Applying better design and existing technologies to new and existing urban developments can go a long way to reducing these pressures.

The Climate Smart Precincts initiative is a coalition of leading businesses and governments working with flagship urban precincts to test the policies, technologies and new business models that will lead to an integrated, precinct-wide approach to urban growth and redesign becoming the norm.

Climate Smart Precincts is convened and administered by The Climate Group, an independent not-for-profit organisation with operations around the world, dedicated to accelerating the growth of a global low carbon economy. We have shaped the initiative through extensive consultation with our corporate and government members and partners.

This report highlights the South Australian Government’s leadership in low-carbon urban development and reports on the results of workshops held in February of 2011. It examines the opportunities to design and create Climate Smart Precincts in the Bowden Village and Tonsley Park developments.

What is a Climate Smart Precinct?

A Climate Smart Precinct is a low carbon, climate resilient precinct where it is easier to make sustainable choices. The Climate Smart Precinct uses the power of technology to enable communities to be highly efficient in resource use. Over time the efficiencies delivered by these technologies at the local and regional scale – both in driving down resource inputs and reducing costly pollution – should mean that these precincts are cheaper to build, and cheaper to live and work in.
A Climate Smart Precinct is by its nature cleaner and healthier, a place that is attractive and welcoming to all segments of society to live, work and do business. The ability of residents to find food, entertainment, work and basic services locally also helps achieve a low carbon footprint.

To adapt to a harsher climate, the Climate Smart Precinct needs to have ample green space, green roofs and have resilient ways to provide essential services. A measure of self-sufficiency in things like local utilities and jobs can help achieve this resilience.

A Climate Smart Precinct can achieve a high level of resource efficiency by integrating the various layers of infrastructure – energy, ICT, transport, waste and water – and striking a good balance between local and centralised energy, water and waste systems. Better resource efficiency in turn generates economic efficiency, an improved environment and a higher quality of life.

Technology is a great enabler of this vision, especially when delivered as part of a strategic, coordinated urban design framework. Enabling technologies include distributed and renewable energy generation, intelligent building management systems, electric vehicles and energy storage, smart metering and energy demand management software. Technology also enables other softer innovations in terms of social media, tele-working, and collaborative consumption.

These technologies already exist and will deliver significant resource efficiencies that go a long way towards helping cities and states reduce their carbon emissions. At the same time, rolling-out these solutions will improve quality of life, create new industries and reduce the long-term cost of living, helping communities adapt to and benefit from a low-carbon economy.

Precincts provide the platform to trial and deploy technologies and systems in an integrated manner to achieve the greatest environmental, economic and social outcomes. They provide the scale to test commercial viability and interoperability, whilst giving a chance to evaluate and replicate solutions.

Climate Smart Precincts will also help communities generate wealth by managing energy, food and waste assets. Over time, a precinct can go beyond being low-carbon, becoming a net exporter of energy or food, for example. This will deliver income and further investment for the precinct.

Climate Smart Precincts, therefore, can be defined not only in terms of technologies and processes, but also by reference to their impacts on residents and their ability to inform future developments.

The Climate Smart Precincts Initiative

To accelerate the development of Climate Smart Precincts, we need to address barriers (whether institutional, policy, regulatory, financial or behavioural) and find the right mix of incentives. It needs to be less complex, less time consuming and less costly to create and operate a more sustainable precinct than a less sustainable alternative.

Members of the Climate Smart Precincts initiative are committed to forming the new coalitions and working relationships across business sectors and government departments that will deliver demonstration projects and innovative approaches to reducing carbon and building climate resilience.

The current group of participating businesses include GE, Origin Energy, IBM, ARUP, Land Lease, Johnson Controls, Cisco, Better Place and Aplom Power. Together these companies offer:

- a multi-disciplinary approach, providing joint expertise and advice on a range considerations, from community governance to renewable energy technology installation.
- significant experience of the design, building, operation, and provision of technology and services within precincts including residential, commercial, light industrial and mixed use in greenfield, brownfield and greyfield contexts.
- commitment to collaborating with government to define and develop solutions, moving beyond highlighting/restating the problems.
- diverse experience in international projects that can act as exemplars to fast track policy thinking and lower the risk of using new technology.

The initiative is open to all governments and businesses that wish to join it, sign up to the principles outlined in this document and play a meaningful role in further articulating and implementing Climate Smart Precincts in Australia.

The initiative recognizes that state and territory governments have a key role to play in enabling precinct level transformation through policy, regulation and their own approach to developing government-owned land. To that end, government members include South Australia, Victoria, Queensland and the Northern Territories, all of which are committed to collaborating with the private sector to produce innovative development models and enabling frameworks.

In November 2008, prior to the seventh meeting of the Council for the Australian Federation (CAF) in Adelaide, leaders from business met with First Ministers for a Roundtable discussion convened by The Climate Group. The Roundtable was followed by a one day CAF-sponsored workshop for state government and business representatives in 2010, to clearly define future areas for collaborative action and desired outcomes.

The outcome of that workshop was an Opportunities Report, presented to First Ministers in July 2010. The Report mapped out opportunities for collaboration between state governments and leading businesses to create low-carbon, climate-resilient urban developments. The meeting produced a
set of priorities for collaboration and a draft list of desired attributes for Climate Smart Precincts, designed to progress a shared vision of low-carbon development.

**PRIORITIES FOR COLLABORATION BETWEEN CLIMATE SMART PRECINCT MEMBERS**

- Take stock of lessons learned from sustainable urban development across Australia and provide knowledge-sharing to improve uptake of innovative approaches.
- Assist the formation of new coalitions and working relationships across business sectors and government departments to deliver effective, integrated demonstration projects.
- Provide an evidence base and testing ground through new and existing projects to better understand the barriers in regulatory, planning and financial processes and work to overcome them.
- Lower the cost of retrofit or construction retrofit of sustainable urban precincts by providing innovative ideas, new technology and advanced design services.
- Over time, refine a benchmark or define the attributes of success for Climate Smart Precincts that evolves out of an evaluation of progress against emissions reductions, as well as a suite of triple bottom line indicators.
- Work in partnership with existing efforts that are seeking to establish tools, guidelines or benchmarks for sustainable urban precincts, and use experience to validate these.
- Communicate to the public the benefits of sustainable urban precincts so that the public starts to demand or expect that similar models be adopted in their own communities.

The CAF Workshop also shaped the Initiative itself. One of its key suggestions was that state governments identify flagship precincts within which possibilities for Climate Smart Precincts could be examined. Government and private sector participants agreed that real-world developments would provide an ideal opportunity to identify practical demonstration projects and make progress towards mainstreaming successful models.

### Climate Smart Precincts in South Australia

South Australia is the first State government to present flagship projects for the Climate Smart Precincts Initiative to work on.

South Australia is aiming to lead in competitiveness, sustainability and liveability. The Government has committed to low carbon, climate resilient urban development through strategic policy and governance initiatives across the various government agencies. Many of these initiatives position South Australia well to fast-track Climate Smart Precincts.

**SOUTH AUSTRALIA’S SUPPORTIVE POLICY ENVIRONMENT**

- **Integrated Design Commission (IDC):** Recognising the need for an integrated approach to urban development, the Government has created the IDC - an Australian first. The outcome of a Thinker’s in Residence Program, the Commission is focused on coordinating across government to achieve development that pursues integrated solutions to population, resources, environment and health issues. The IDC is working with State and local government, the design, planning and development sector—as well as the community—to achieve a more sustainable, design led, urban form that aspires to transform and enhance quality of life for South Australians.
- **30 year plan for Greater Adelaide:** Aims to improve competitiveness, liveability and sustainability and resilience to climate change. It aspires to develop neighbourhoods that represent world’s best practice in urban design. It sets out policies and targets to deliver urban precincts that are water and energy efficient, that reduce reliance on motor-vehicles through provision of local services, and that foster a sense of community. It recognises the need for new governance structures to deliver the vision and has established structures such as the Government Planning and Coordination Committee to coordinate government agency input into the development of key strategic growth precincts that will assist in the delivery of the new, compact and more sustainable urban form. Targets and policies in the Plan include:
  - Develop a compact Greater Adelaide: Require 70 per cent of all new residential development to be within the existing urban area (infill) by the end of the Plan’s life. Aim for 14 Transit Oriented Developments, with dwelling densities in the order of 25-35 dwellings per hectare; Infill development to be located in close proximity to services, facilities and other important amenities; Incorporate new national broadband network to allow for connected communities; Designate transit corridors so a significant proportion of housing and employment growth is located within 800 metres of a transit corridor.
  - Distributed energy generation: Provide opportunity for neighbourhood level energy generation, such as co-generation and broadening the renewable energy feed-in tariff; Pursue smart grid/ green grid initiatives; Provide incentives for embedded generation and renewable energy.
  - Energy efficiency: Require six star standard for all new buildings; Introduce air-conditioning standards in line with COAG recommendations; Incorporate new baseline for energy efficiency targets into Structure Plans and Precinct Requirements; Establish an energy-use database for non-residential buildings to inform the design and modelling of energy use in new buildings; Design and orientate new residential development to minimise energy use; Encourage increased use of electric vehicles.
  - Water use efficiency: Water sensitive urban design mandated in all new dwellings and urban developments, including a provision that 15 per cent of supply must come from alternative sources; Develop design principles for multi-unit and mixed-use developments (including for place-making, energy, water and waste).
The South Australian Government has a raft of other complementary policies in water, waste, energy and transport that together provide a supportive environment for the development of Climate Smart Precincts. These include:

- Increasing the State’s target for renewable energy production to 33 per cent by 2020, compared to the national target of 20 per cent by 2020.
- Upgrading public transport infrastructure to the tune of $11.4 billion over the four years 2009-2013.
- The $2 million Building Innovation Fund which aims to establish South Australia as the nation’s leader in demonstrating innovative ways to reduce the carbon footprint of existing commercial buildings.
- The Residential Energy Efficiency Scheme, which requires energy retailers to provide incentives for households to reduce their greenhouse gas emissions and lower their energy bills through energy efficiency measures.
- The Solar Feed-in Scheme which provides a premium tariff to consumers who feed solar energy back to the grid.
- Setting ambitious targets on waste recycling, including recycling 90 per cent of construction and demolition waste.
- Providing a payroll tax rebate for renewable energy projects.
- Creating $1 million worth of grants to kick-start the creation of community-owned and operated solar farms.

Based on its leadership in formulating enabling policy and implementing model sustainable development communities, South Australia is well placed to champion Climate Smart Precincts and to host discussions about how to create such a precinct in practice.

THE SOUTHERN AUSTRALIAN WORKSHOPS

In February 2011, The Climate Group and the South Australian Government jointly ran two workshops, hosted by the Land Management Corporation (LMC) and The Department of Trade and Economic Development (DTED). The participating businesses, who are also part of the wider initiative, were Arup, Delfin Land Lease, Origin Energy, Johnson Controls, GE and IBM. The Green Building Council Association, Monash Sustainability Institute and Sustainability Victoria also participated, in addition to South Australia’s Integrated Design Commissioner, drawing links to best practice in policy, research and projects around Australia and internationally.

The workshops began with a site visit to Lochiel Park, which is nearly complete, to set the scene for sustainable urban developments in South Australia. Subsequent site visits to Bowden Village and Tonsley Park invited participants’ responses to those sites as potential Climate Smart Precincts. Lochiel Park, Bowden Village and Tonsley Park represent different stages of progress towards Premier Rann’s vision for environmentally sustainable development and cover the breadth of residential and commercial mixes. When completed, each site will offer a benchmark for best practice in residential, mixed-use and industrial sustainable design and planning.

All three sites are government owned. The LMC is leading on the development of Lochiel Park and Bowden Village developments and is partnering with the DTED on the planning and preparation work for Tonsley Park.

SOUTH AUSTRALIA’S FLAGSHIP PROJECTS

Lochiel Park

In 2004 Premier Rann announced the development of Lochiel Park as a model green village, to become a leader in green urban living. Urban Design Guidelines developed for the site now provide a new benchmark for sustainable development in South Australia. Located 8 kms North-East of the Adelaide CBD, it is a 14.71 hectare site adjacent to the River Torrens Linear Park that has been developed to lead the Premier’s vision in reducing energy and water use while providing affordable homes that encourage a diverse community. It has set targets of reducing greenhouse gas emissions of 74 per cent, energy use by 68 per cent and potable water use by 78 per cent against a baseline of an average SA household in 2004.

Lochiel Park demonstrates the vision of Climate Smart Precincts by mandating increased thermal ratings of the houses to 7.5 stars, PV cells and a solar hot water system on every house, in addition to a stormwater recycling water system.

All houses are fitted with an eco-vision system which allows individual households to monitor their own behaviour for water, gas and electricity use, greenhouse gas emissions. In addition, the development provides a sustainability education centre to assist industry, schools and the community to learn more about sustainable living.

Walking paths linked to wetlands and urban forest create a sense of connection to nature and opportunities for a healthy lifestyle. Cycling trails link to the adjacent River Torrens Linear Park and provide connection to the existing public transport system including the O-Bahn, enhanced by a free bike lending scheme. A Council community bus stop provides transport to local shops and facilities, further lessening reliance on cars.

Community gardens and a wetlands construction project provide the chance for residents to meet and build a community identity.

Lochiel Park is approaching completion, and when fully developed will have 100 dwellings with an estimated population of 250 people.

Bowden Village

Bowden Urban Village (Bowden Village) will be the key to the delivery of the 30 year plan for Greater Adelaide. The vision for Bowden Village is to create a “walkable urban neighbourhood” – a sustainable and mixed-use development of medium and high density that provides a replicable benchmark across Metropolitan Adelaide for other infill developments around transit corridors. Bowden’s Master Planning phase is complete and provides for over 2200 houses, several new parks and public spaces, significant retail and office accommodation, as well as opportunities for the creative arts and allied industries.

Bowden Village follows the One Planet Living Sustainability Principles and aspires to be a zero carbon development. Measures towards achieving this goal include load limiting devices for air-conditioning in all buildings and mandating 5 Star Green Star compliance for all buildings, while imposing a target for 6 Star buildings.

The development aims to install smart meters and includes a proposal for distributed energy in the form of a commercially viable tri-generation plant. Provision of smart vehicle to grid energy storage stations is proposed as a commercially viable operation, along with HPEV recharging stations. Other sustainability elements include water capture and re-use, vertical composters, roof gardens, community gardens and a community recycling centre.

Tonsley Park

In December 2009 the South Australian Government acquired the former Mitsubishi Motors car assembly plant site and announced it would re-develop it to B1 uses as a vibrant, mixed-use employment precinct. The State Government’s redevelopment of Tonsley Park aims to create thousands of new jobs and nurture a new generation of business enterprises with a focus on sustainable and clean technologies, advanced manufacturing and community facilities.

Tonsley Park is already home to Dell’s latest modular data centre. Delivered in partnership with Adelaide firm Tier 5, it is the first in the world to go live, providing data storage and processing at half the energy use of traditional data-centres. This offers the chance for Adelaide to become a data centre hub and is an asset for future businesses setting up premises on the site.

A second cornerstone of the Tonsley Park redevelopment will be a Sustainable Industries Education Centre delivered through I-ME South Australia, in collaboration with South Australian universities and industry. It will be a focal point for research and development and will integrate environmental industries and advanced manufacturing with activities at Finders University, Finders Medical Centre and Science Park, all neighbouring the site.

1 One Planet Living is a global initiative based on 10 principles of sustainable living developed by WWF-Australia and BEF. The 10 principles cover water, energy, biodiversity, cultural heritage, local economy and health and happiness. See http://www.oneplanetliving.org/index.html
Workshop Outcomes

A key outcome of the South Australian workshops was the endorsement and refinement of the Principles for Climate Smart Precincts. These Principles provide guidance both for the particular sites discussed and for future design and implementation of Climate Smart Precincts around Australia.

CLIMATE SMART PRECINCT PRINCIPLES

1. BRING THE COMMUNITY ALONG FOR THE WHOLE JOURNEY
2. USE TECHNOLOGY TO MAKE PRECINCTS SMARTER
3. BROADEN THE DECISION-MAKING FRAME TO RECOGNISE A WIDE RANGE OF ECONOMIC BENEFITS
4. PLAN HOLISTICALLY AND IN PARTNERSHIP
5. DESIGN WITH FUTURE RESIDENTS IN MIND AND END GOALS IN SIGHT
6. EXPLORE NEW MODELS OF COLLABORATIVE GOVERNANCE
7. ENCOURAGE TRIALING, MONITORING AND EVALUATION

Workshop Outcomes

The workshops in South Australia explored the scale of the opportunity presented by Climate Smart Precincts and the different roles that can be played at the community, technology, regulatory, planning, governance, and financial levels in creating them.

In addition, participants identified specific opportunities presented by the Bowden Village and Tonsley Park sites and posed some key suggestions for LMC and DTED, as the precinct owners and developers, to consider.

The workshops generated enthusiasm and engagement by the private sector participants in relation to the possibilities for both Bowden Village and Tonsley Park.

Workshop Outcomes

There was a high degree of consensus that South Australia could lead the way both nationally and internationally in developing Climate Smart Precincts, building on the State’s progress to date.

This report reflects the nature and extent of the discussions during the site visits and the workshops. Participants’ observations, insights, relevant case studies and suggestions are structured under the Climate Smart Precinct Principles. We have worked to include all of the various points raised during the workshops (Discussion Points) but provide more detail on the areas of greatest focus – or deemed to be of most importance by participants (Discussion Focus).

Case studies were identified by participants during the course of discussions, based on their own experience or research. These are included where relevant, to illustrate areas of opportunity for Bowden Village or Tonsley Park, or best practice examples from Australia or around the world that could inform the future development of leading edge Climate Smart Precincts generally.

PRINCIPLE ONE

BRING THE COMMUNITY ALONG FOR THE WHOLE JOURNEY

DISCUSSION POINTS

- Create innovative ways to establish and engage the community, inviting people into the design and development process from the outset so the vision for the site is shared.
- Undertake “early activation” of the site for cultural and community activities, to seed the local character of the site and excite community interest in its development.
- Create an environment where the community is invested in the desired outcomes for the precinct and is rewarded in multiple ways for achieving goals – so that it is cheaper, easier and even fun to live and work sustainably.
- Provide dedicated programs and educational facilities to engage residents in saving energy and water, reducing waste and switching to more sustainable transport, so they readily adopt sustainable practices and understand and accept the benefits.
- Be imaginative in creating a shared community vision, using social networking, public art and entrepreneurship.
- Provide and integrate regular communications to residents and the broader community on progress towards precinct goals.

DISCUSSION FOCUS

Climate Smart Precincts will be more attractive to live in and offer a greater quality of life. To fully realise these benefits within early projects, and eventually across broader society, some attitudinal and cultural shifts will be needed. The day-to-day experience of Climate Smart Precincts will educate residents over time as they learn to save energy and water, reduce waste and switch...
to more sustainable transport. It will also provide a real life demonstration to inspire others with a positive vision, in turn promoting the benefits of a low carbon, climate resilient community. To that end, communication and education programs are essential to ensuring that Climate Smart Precincts are replicable around Australia.

While some of the benefits of living more sustainably will be immediately obvious, others will emerge with time. So it is important that all the precinct stakeholders, particularly potential residents and businesses, are committed to the long-term vision of the site. This requires early engagement in developing a shared vision and ongoing feedback on progress towards that vision, so that the community feels rewarded in living and working in the precinct when it takes shape – whether that be through savings, or an enhanced lifestyle and working environment.

There are a number of tools and models available to help create a sense of community, shared vision and ownership, and to encourage sustainable behaviour. These range from up-front consultation with potential residents and businesses of a Climate Smart Precinct to the innovative use of public space and artwork that explain the invisible workings and achievements of sustainable energy, water and waste systems.

Lochiel Park demonstrates a number of these tools. A community website provides a valuable link to local events, a forum for community discussion, a medium to arrange car pooling and many other opportunities to help build a strong, cohesive community. The forum has been instrumental in pulling together teams of residents to undertake habitat restoration and create a community garden.

“Early activation” of a precinct, through farmers’ markets and artists’ studios, builds community early on, generates community excitement about the developments and creates acceptance of a gradual, incremental build-up of basic infrastructure. Bowden Village is already supporting artists and businesses, are committed to the long-term vision of the site. This requires early engagement with potential residents and businesses of a Climate Smart Precinct to the innovative use of public space and artwork that explain the invisible workings and achievements of sustainable energy, water and waste systems.

An exemplar of early community engagement and activation is Central Park in Chippendale, N.S.W.

**CASE STUDY – COMMUNITY ENGAGEMENT AT CENTRAL PARK, CHIPPENDALE NSW**

Central Park is a $2 billion precinct development on the site of the Carlton and United Breweries in Chippendale, just on the edge of Sydney’s CBD. This mixed use project will feature commercial, residential and retail space and will create homes for around 2,500 new residents, as well as workspace for 5,400 people.

The developer, Frasers Property, conducted a range of community consultation activities including community information sessions and design workshops between 2007 – 2010, which influenced the Central Park concept master plan.

Acknowledging the strong community interest in the heritage of the site, Frasers held public tours of the site prior to demolition, and recently launched a public art installation upon the façade of the retained heritage Brewery Yard building, which celebrates the site’s social history.

Other outreach has included project newsletters, appointing a Community Liaison Officer, and using social media to post and update a collection of short videos telling the story of the precinct and the vision for its development.

A Central Park website provides an accessible hub for information and news about the park.

The development has engaged and supported the local arts community through the creation of Fraser Studios, a multi-disciplinary arts space occupying three warehouses on the site. Frasers Property has partnered with local not-for-profit arts collective Queen Street Studios on the project, providing free, three-month studio residencies for visual artists, as well as free or subsidised rehearsal space. Fraser Studios host regular public open days – which have been twinned with public information sessions on the wider Central Park development.

In another temporary activation of vacant buildings, Frasers Property has also provided a free space for the set-up of a local food co-operative, establishing a forum for small producers from within the Sydney Basin.

There is an opportunity for Tonsley Park to be a large scale, educational showcase for the future of energy, food, water and waste management. Every venture or building within Tonsley Park could be an exemplar, raising the bar and educating the public about the future possibilities for clean, sustainable urban development. Tonsley Park could become a destination for learning opportunities, as much as for the other amenities on the site. Ideally the education would be experiential and would create an environment where businesses are inspired to innovate.

**CASE STUDY - LESSONS IN COMMUNITY ENGAGEMENT FROM MAWSON LAKES DEVELOPMENT, ADELAIDE**

Mawson Lakes is a fully-planned 600 hectare community, developed by Delfin Lend Lease on the outskirts of Adelaide. Adherence to the following approaches in community engagement has assisted the developers in facilitating a strong sense of community identity within the precinct:

- Establish an on-site welcoming project office in each location as soon as possible and ensure staff get ‘out and about’ among the local community.
- Establish a community database and regularly (at least fortnightly) run focus groups on a range of topics.
- Establish a community portal to keep locals informed of progress and provide a chat room to respond to questions.
- Involve community representatives as part of the project’s governance structure as soon as possible.

**SUGGESTIONS**

1. Create and stimulate a sense of community identity at Tonsley Park, for example through farmers markets, artists’ studios and events.
2. Identify and deploy best practice models for community engagement with leading bodies such as the International Association for Public Participation.
3. Create an education showcase at Tonsley Park, so that it becomes a destination in itself and provides inspiration for other communities.

**Artist’s studio at Central Park, Sydney. Courtesy of Frasers Property.**
PRINCIPLE TWO
USE TECHNOLOGY TO MAKE PRECINCTS SMARTER

DISCUSSION POINTS
- Select the right technologies to shape the desired outcome for the precinct.
- Integrate technologies in a manner that respects the mutual role of people and community in reaching sustainability outcomes.
- Capitalise on the potential for distributed energy generation appropriate to the environmental characteristics of the site.
- Provide infrastructure for electric vehicles and access to low carbon public transport.
- Integrate energy, water and waste infrastructure to encourage efficiencies.
- Build conservation intelligence into buildings, through home network sensors and building management systems.
- Provide interactivity and information services to drive sustainable choices, and to make the sustainable choice the simpler option.
- Install performance monitoring systems from the start to provide in-situ feedback, and track progress towards sustainability goals.
- Design the infrastructure to allow localised water farming and waste/water treatment.
- Adopt a flexible and modular approach to technology deployment, to minimise technology redundancy and allow the right investments to be made at the right time.

DISCUSSION FOCUS
Technology is a great enabler of our efforts to become low-carbon and climate resilient. Technologies such as solar panels, smart meters and electric vehicles can reach their full potential when integrated with good precinct-wide design and industrial ecology principles, and when introduced in line with softer educational and behaviour change programs.

The ‘smart’ aspect of ‘Climate Smart Precinct’ refers to the layer of instrumentation and communication that ties the different technologies together and enables them to talk to each other and respond to residents’ demands. Smart grids, smart transport, smart buildings and smarter assets, its scale and its early stage of development, there is significant potential to position Tonsley and bolster its resilience to future climate change impacts. In light of its existing features and the intelligent systems that join these technologies up, to minimise the precinct’s carbon footprint sustainable urban design. Each presents opportunities to showcase best practice technologies and the overall potential of this approach is huge: information and value.

For example, options could be explored with the local energy provider or energy utility to provide incentives for distributed energy and micro-grids technology. This can help guide the effective interaction between the development of locally-generated energy and centralised supply.

Electric vehicles can be smart, acting in mass as an additional resource, feeding stored energy into the micro-grid and at the same time reducing residents’ reliance on fossil fuels. Tonsley Park already has one of Australia’s only fast EV charging points and the history of the site as a vehicle assembly centre provides a symbolic platform for the next generation of vehicles.

FUTURE POTENTIAL FOR ELECTRIC VEHICLES IN PRECINCTS
EVs and local energy generation can complement each other in two important ways. Firstly, EVs can use low carbon energy produced within the precinct to charge their batteries, making them a clean, sustainable transport option. Secondly, EVs can also be twinned with extra battery storage, providing a useful reservoir for any electricity produced by intermittent or renewable sources that exceeds demand at any given time. EVs can then tap into this stored energy to re-charge, resulting in less demand on the grid and helping to ensure that 100 per cent of electricity generated is used.

The expected arrival of two-way or bi-directional charging within the next 5 years will allow electricity to flow not only from the grid to EVs, but also vice versa, from EVs to the grid. This means that EVs can feed stored electricity into the grid or their local building during peak demand times, recharging their batteries again when demand is lower or renewable production higher. This can smooth peaks in electricity demand and help reduce the need for costly peak generation capacity and additional grid infrastructure.

How EVs are likely to be used within a precinct will be important in determining the best way to integrate them with generation, ensuring they can meet the demands placed on them as vehicles, while providing as much benefit to the grid as possible.

Beyond electric vehicles, the size and scale of Tonsley Park lends itself to an iconic transport option, such as a monorail or another form of light rail, in addition to a comprehensive mix of sustainable transport options. Building on the railway line running alongside the site.

Integrated and intelligent buildings can automate energy reductions at times of peak demand. However, incentives are required to drive the business case and capture the value to utilities of reduced demand at peak times. Both Bowden Village and Tonsley Park could lead the way in demonstrating the extent to which smart building management systems can reduce peak demand, to guide future developments and influence standard practice in the market.

For example, options could be explored with the local energy provider or energy utility to provide payment in return for offering a proportion of demand on an interruptible supply basis. This could provide an additional revenue stream to finance intelligent management systems within buildings and precincts as a whole.

Tying all of these technology solutions together is an intelligent, instrumented infrastructure connected by broadband technology, allowing the system to be engaging and responsive, generating information and value. The overall potential of this approach is huge: information and
communications technology (ICT) alone can enable 7.8 gigatonnes of CO2e reductions globally by 2020 (15 per cent of global emissions) when these smart solutions are applied to transport, grid and building infrastructure. Investment in pervasive high-speed broadband, together with actively encouraged tele-working and distributed service delivery in developments like Bowden Village and Tonsley Park, will have huge carbon benefits in terms of avoided transport emissions. And when residents stay in the vicinity they contribute to the life of the ‘village’, which will in turn grow as a place of exchange, commerce and culture.

CASE STUDY: INTEGRATED TECHNOLOGY DEPLOYMENT IN THE TOWNSVILLE SOLAR CITY, QUEENSLAND

The Townsville Solar City project is part of the $94 million Australian Government Solar Cities program - designed to support a sustainable energy future in urban locations throughout Australia.

The project will trial a range of initiatives that aim to reduce wasteful energy usage, increase solar energy usage and cut greenhouse gas emissions by more than 50,000 tonnes over a seven year period.

Ergon Energy is leading the project in a consortium with the Queensland Government, Townsville City Council, Delfin Lease, Honeycombes Property Group and Crafal Pty Ltd.

Five initiatives comprise the Townsville Solar City project, including:
- The Magnetic Island Solar Suburb transformation, led by Ergon Energy, which aims to reduce ‘peak demand’ and electricity usage, reduce greenhouse gas emissions, save customers money and defer network investment.
- The Rocky Springs Project, led by Delfin Lease, Honeycombes Property Group and Crafalo Pty Ltd. Located 15km south east of the Townsville CBD. On completion, this project will house over 38,000 people and will showcase a total of 155 solar-powered, energy efficient homes across a five-year period. The aim of this project is to demonstrate the use of in-house displays and smart meters, as well as other interactive measures to manage electricity use sustainably, together with the benefit of combining these measures with solar PV systems. Homes built to the present building code act as a control group for baseline comparison against the energy efficient ones. Data from the different homes’ energy use will be used to help work towards zero emission homes, which are attractive to, and within the reach of home buyers.
- Townsville City Council’s City solar community capacity building and education program, which underpins all of the Townsville initiatives. This program trials a range of effective methods to support and encourage residents to reduce their home energy demand, leading to lower electricity bills and reduced greenhouse gas emissions across Townsville. It is based on a range of methodologies around community-based and collective social marketing and thematic communication, advised by a number of leading Australian and international academics.

SUGGESTIONS

4. Establish both Bowden Village and Tonsley Park as showcases for intelligent technologies and systems, to minimise their carbon footprint and bolster their resilience to future climate change impacts.
5. Consolidate the position of Bowden Village and Tonsley Park as Climate Smart technology showcases through public access to case studies, resources and trial data, to inform future precinct developments.
6. Utilise the size and scale of Tonsley Park to trial as many components of the smart grid as possible, to contribute to the roll-out of smart grid solutions in Australia.
7. Draw upon relationships with local and adjoining research and TAFE facilities to examine different scenarios and mechanisms that can make various technologies viable in the broader marketplace.
8. Encourage a flexible approach to planning that deploys technologies and systems that are currently available in an incremental manner, whilst retaining sufficient flexibility to build in innovations as they become technically feasible and commercially viable.
9. Bolster the case for distributed energy and micro-grids by exploring ways to mandate or incentivise households and businesses within the Tonsley Park precinct to purchase energy generated on-site.
10. Contribute to the achievement of the State’s Renewable Energy Target by examining ways to mandate or incentivise Tonsley Park households and businesses to purchase renewable energy, prioritising particular energy sources as necessary.
11. Explore arrangements for demand side management contracts between building owners and energy utilities to finance smart building solutions within commercial buildings in Bowden Village and Tonsley Park.
12. Promote regulatory reform of the energy market to recognise the benefits of distributed energy, supported by evidence gathered from Climate Smart Precinct developments.
14. Encourage tele-working and distributed service delivery at Bowden Village and Tonsley Park.
15. Provide free access to energy data, paving the way for systems that would allow payment for energy data as a basic service for all energy customers.
At this stage, a Climate Smart Precincts approach to Tonsley Park could assist the LMC and DTED to commercial and industrial developments around the country. Setting the bar in Tonsley Park creates huge potential for replication in residential, the potential to become a world-class centre for sustainable design innovation, at an unprecedented scale in Australia. Indeed, Tonsley Park has the potential to become a world-class centre for sustainable design innovation, at an unprecedented scale in Australia. Setting the bar in Tonsley Park creates huge potential for replication in residential, commercial and industrial developments around the country.

At this stage, a Climate Smart Precincts approach to Tonsley Park could assist the LMC and DTED to leverage a raft of leading edge resources and ideas from around the world. Various business opportunities were identified for the site, including PV manufacturing, bio-robotics, rapid-prototyping industries and global software engineering. Given Tonsley Park’s proximity to Flinders University’s world-class medicine faculty and medical facilities, the opportunity exists for the site to be home to pioneering tele-medical and distance learning businesses servicing the entire state. A distance-education media hub in partnership with the TAFE and Flinders University could complement the TAFE facility and promote connectivity of remote communities across the state. The site also lends itself to hydroponics, with possibilities for incubating solutions for sustainable agriculture.

Beyond providing technology solutions, the private sector can bring head offices to the site, helping to create the vision, character and opportunities for the precinct. The presence of high-profile (and potentially international) corporations within the precinct can showcase best practice in building design, invest in clean technologies and smart grid connectivity, establish new commercial applications, generate local jobs, create research opportunities and provide a global profile for the precinct’s world-class innovation.

If all the design and planning elements combine to realise its full potential, Tonsley Park could position the South Australian Government and its project partners as leaders in driving future jobs and investment in low-carbon solutions. This could build an international profile for the state and attract significant investment. It is critical to ensure that all of this opportunity is captured and is factored into the business case for the Tonsley Park precinct development.

Major companies will invest in partnership with government in such precincts if the government’s long term commitment to working in partnership and sharing risk and reward is clear. Ultimately, the private sector needs policy certainty to underpin its engagement in innovative sustainable development.

Principle Three
Broaden the Decision-Making Frame to Recognise a Wide Range of Economic Benefits

Discussion Points
- Take a long-term view of investment, and the potential benefits to multiple stakeholders.
- Factor positive social and environmental externalities into the business case.
- Encourage mechanisms that lower the upfront cost of technologies and infrastructure that improve efficiency and lower emissions.
- Consider only those incentive mechanisms for the private sector that provide a solid platform for long-term industry development.

Discussion Focus
It is important to note that Climate Smart Precincts are still an evolving concept and require the trialing of a range of new models. This means that traditional approaches to assessing value and making the business case also need to change.

The development of sustainable built environments and communities requires a long-term approach to investment and planning from a range of interested parties. The benefits of creating a low-carbon, climate resilient, socially and environmentally sustainable precincts are multi-dimensional and offer opportunities to a wide range of stakeholders, all of whom have differing motivations and business models for participation. These multiple perspectives can be challenging for the lead developer to fully capture in making the overarching business case for the precinct.

Where state government leads a precinct development, there is significant opportunity to engage a broad spectrum of private sector players in understanding the full potential of this benefit, and balance opportunities for individual participants with the best outcomes for society as a whole. A comprehensive cost-benefit analysis should examine the threshold levels of risk and return for all public and private sector stakeholders, and their respective “topping points” for participation in the development. It is critical that this analysis includes both quantitative and qualitative elements, in addition to a thorough and rigorous evaluation of the long-term economic, social and environmental benefits of the precinct to development participants, the local community and the state as a whole.

Climate Smart Precincts challenge traditional financial templates and assumptions that equate projected resident numbers with pre-determined numbers of roads, energy networks or sewerage systems. Indeed, they offer genuine opportunities to reduce or even avoid some “hard” infrastructure, thereby reducing the burden on the public purse (and over time, as Climate Smart Precincts proliferate, the extent of relief they can offer to infrastructure will expand).

In the context of ever-increasing demand for more land, more power lines and more roads, Climate Smart Precincts can help shift a state government’s budgeting models, reducing up-front capital expenditure, producing operational savings, and demonstrating pay-back periods for capital expenditure. Beyond this, they offer opportunities to attract new technologies, products, services and businesses to the state in the medium and long term, which need to be factored into the business case. Indeed, Climate Smart Precincts can help to change the way that South Australia (and other states) approaches investment and job creation. This is particularly the case with small regional economies that need to establish a unique competitive edge to draw investment away from bigger economic centres.

A number of the existing attributes of the Tonsley Park development are attractive to the private sector, including its proximity to Flinders University, together with the confirmed establishment of both the TAFE industry training facility and the Data Centre within the site. Indeed, Tonsley Park has the potential to become a world-class centre for sustainable design innovation, at an unprecedented scale in Australia. Setting the bar in Tonsley Park creates huge potential for replication in residential, commercial and industrial developments around the country.

At this stage, a Climate Smart Precincts approach to Tonsley Park could assist the LMC and DTED to
16. Develop a framework enabling an expanded cost-benefit analysis at Tonsley Park. This should include the long-term social, environmental and broader economic opportunities and benefits of a Climate Smart Precinct.

17. Identify the interests of and potential benefits to a broad range of public and private sector stakeholders, examine their threshold levels of risk and return, and their respective “topping points” for participation in the Tonsley Park development.

18. Promote outcomes from Climate Smart Precincts to provide an evidence base to challenge financial templates and assumptions in future developments.

**PRINCIPLE FOUR**

**PLAN HOLISTICALLY AND IN PARTNERSHIP**

**DISCUSSION POINTS**

- Recognise the value of Climate Smart Precinct projects in meeting multiple public policy objectives.

- Work collaboratively across government departments to jointly achieve policy outcomes through the development.

- Begin consultation with future private sector and government partners at an early stage of planning.

- Consider the broader site context, so that adjacent assets, both existing and planned, are leveraged to become an integral part of the vision.

- Include integrated infrastructure, shared services and incentives to private sector engagement at the master plan stage.

**DISCUSSION FOCUS**

In approaching the development of government-owned land, new models of government leadership are required in setting the precinct vision and planning with re-aligned incentive structures to encourage the private sector to actively participate.

Precincts offer the chance to achieve a number of government objectives and targets in a holistic, joined-up way. Developing a precinct requires consideration of overlapping government priorities and drivers around population growth, shifting demographics, urban infill, increasing gross state product and sustainable development. This requires governments to actively collaborate across departments, agencies and authorities, to align the opportunities presented by a precinct development with a range of existing government policy objectives. To do this, mechanisms should be developed to encourage engagement from a range of agencies in precinct planning at an early stage and continuing through the life of the development.

Building on intra-government collaboration, greater partnership between government and the private sector can create the innovation and fulfill the promise of Climate Smart Precincts. It can serve to attract clean technologies and businesses, providing green jobs to the developments and surrounding areas. Up-front and continuing engagement with the private sector should be an integral part of the strategy for recruiting businesses to operate at the site.

Bringing the private sector into an early stage of concept planning can help raise the level of ambition for a precinct development, as businesses can suggest innovative solutions and push the boundaries. Allowing the private sector freedom to engage in “big picture” thinking, within the clear frame of agreed targets against a long-term vision for the precinct can engender innovative “whole of precinct” technology solutions and inter-connected systems. Additionally, it can encourage creative approaches to place-making and promote sustainable behaviours once precincts are functioning. It can also reduce the burden on government, in terms of funding and risk-sharing, for the development.

A combination of incentives is required to attract the right calibre and mix of businesses to set up within a Climate Smart Precinct and invest in this vision. These include:

- Encouraging shared service delivery through, for example, an aggregated call centre.

- Pursuing mixed-use development that plans for adequate housing, hotel accommodation, hospitality and other support services.

- Blending residential and commercial zones within the precinct in creative ways, so that the community actively engages with and supports local business enterprise.

- Promoting two-way exchange with nearby universities and TAFE facilities, enabling industry-focused research and training, student industry placements and education opportunities for employees.

- Offering taxation incentives for start-ups or to reward sustainable investment/business practice

- Establishing incubator spaces, enticing entrepreneurs through favourable rents or conditions to trial innovations.

- Fostering connections between Small to Medium Enterprises and larger companies, providing access to distribution networks, infrastructure and venture capital – a potential role for Innovate SA.

- Trailling mechanisms of support from government that address regulatory or institutional barriers standing in the way of achieving precinct goals.

**CASE STUDY: A COLLABORATIVE APPROACH TO DELIVERY - SMART GRID, SMART CITY, NEWCASTLE, NSW**

In 2010, the Australian Government announced $100 million of funding to develop the Smart Grid, Smart City demonstration project in Newcastle, NSW, Australia’s first commercial-scale smart grid. The objective of this initiative is to compile comprehensive and rigorous information about the costs and benefits of smart grids, to inform future decision-making by government, electricity providers and technology suppliers around smart grid roll-outs, as well as assisting consumers to manage energy use.

Smart Grid, Smart City deployed a partnership approach between the Government and the energy sector, with energy utilities invited to form consortia of interested private and public sector participants in responding to the project brief. Energy Australia led the successful consortium, working with its technology, service and implementation partners IBM Australia, GE Energy Australia, AGL Energy, Sydney Water, Hunter Water Australia, and Newcastle City Council.

The approach of the Federal Government was based on the recognition that:

- A consortium approach can deliver integrated vision and joined-up, inter-operable systems to realise the overarching objectives of the program; and

- One entity must be responsible for heading the consortium and taking the lead on project development and communications with external stakeholders, to ensure effective management of the group and to keep the various tranches of work in line with the “big picture” desired/agreed outcomes.

Given its sheer scale and the multiple opportunities for sustainable development, broad consultation with a range of private sector and civil society participants would help to establish Tonsley Park as a Climate Smart Precinct.

Businesses also need to collaborate in broader and deeper ways to create integrated, sustainable developments at precinct level. Building Climate Smart Precincts is a multi-dimensional challenge requiring expertise across many sectors and players. However, no one company has all the solutions or the business models to recognise and realise all of the available opportunities. Truly integrated, precinct-scale outcomes may only be apparent when multiple parties come together, recognising that the collective capacity to realise the precinct vision is greater than the sum of their individual parts. To encourage private sector participants to develop such business models and to collaborate with organisations that might otherwise be regarded as competitors, they need to be invited to respond to the broad aspirational goals for the precinct in question.
As noted previously, there is significant potential to brand and market Tonsley Park as an Australian site, about the economic history of the site, and the broader city. Keeping the essence of the existing sites and changing their behaviour to accommodate those aspects.

Climate Smart Precincts present opportunities to deploy user-centered design, which focuses on the needs, wants, and perspectives of the end user (those who will live, work and conduct business in the future) in mind and end goals in sight.

**DISCUSSION POINTS**
- Design for quality of life, cultural diversity and economic vibrancy within the precinct and its surrounds.
- Utilise user-centered design to ensure that the precinct is attractive to potential future residents, businesses and investors.
- Create a strong sense of place for the precinct, reflecting its history and cultural significance to create a vision for the future that builds community ownership.
- Develop a brand strategy that guides the recruitment of future residents and businesses.
- Work with the principles of industrial ecology so that waste, energy and water are shared and reused as much as possible.
- Encourage multi-dimensional use of space and shared assets to improve environmental and economic efficiency and performance, and to enhance the vitality of the community.
- Provide as many locally-based services as possible to limit transport emissions and encourage active lifestyles.
- Stimulate local job creation and lower ecological footprints through preference for locally generated materials, services and products.

**DISCUSSION FOCUS**
Climate Smart Precincts present opportunities to deploy user-centered design, which focuses on the needs, wants, and perspectives of the end user (those who will live, work and conduct business within the precinct). In designing such a precinct, consideration should be given to how users can, want, or need to relate to the site, its features and its technologies, rather than forcing the users to change their behaviour to accommodate those aspects. Urban infill projects have the advantage of an inherited character, particularly those like Bowden Village and Tonsley Park, where an aging industrial infrastructure tells a culturally important story about the economic history of the site, and the broader city. Keeping the essence of the existing sites can be a key amenity, which will in turn help generate the attractors for creating a vibrant innovative community. This means retaining as much of the existing built form as is practical, or re-using what cannot be kept in creative ways to maintain the aesthetic appeal of historical remnants.

As noted previously, there is significant potential to brand and market Tonsley Park as an Australian first in sustainable precinct design – which in itself is an important driver to attract residents and businesses capable of helping to achieve this vision.

It is crucial to clearly brand a Climate Smart Precinct and to communicate its core elements as part of that branding. Branding the site is predicated on a comprehensive place-making exercise. In the case of a brownfield or greyfield development, the sense of place should reflect the history and cultural significance of the site. In every case, a core element of place-making is a vision for the future that clearly distinguishes the precinct and its features from existing developments and articulates the benefits for prospective residents, businesses and service operators. It should inspire “early adopters” of technology and sustainable living and working, entrepreneurs and forward-thinking businesses.

But it should also provide a vision for quality of life, cultural diversity and economic vibrancy within the precinct and its surrounds that is attractive to the broader community. The vision and strategy for the precinct development should aim to reach out to and engage more mainstream households and businesses over time, as it is widely perceived to be a great place to live, work and do business.

A strategic branding exercise affords the opportunity to develop not only the partnerships (between investors, business owners, local government, residents, and universities) but also the values, systems, behaviours and the built form required to meet the place-making vision. Working with a concerted and consultative approach, future scenarios for the site can be illustrated and communicated as positive visions of quality lifestyles and successful business environments. Creating a brand strategy can be the vehicle through which the developer and local government partner mediates support and interest from investors, existing neighbours to the site, potential residents/businesses and relevant authorities.

Forging global partnerships with NGOs, foundations and academic institutions, such as The Climate Group and The Rocky Mountain Institute, could assist in gaining international exposure for the ambitions and achievements of the site, in addition to providing invaluable input into design, delivery and evaluation.

In the case of Tonsley, a strategic branding exercise can help to understand the kind of sustainable industries that could be attracted to cluster there, as well as the types of supportive infrastructure needed to complement those industries, alongside residents. It could also entice businesses to set up a regional/national office within the precinct that operates as both investor and showcase of sustainable design, products or services.

**CASE STUDY: DEVELOPING A BRAND STRATEGY IN THE CITY OF KNOX, VICTORIA**

The City of Knox is located approximately 25kms from the Melbourne GPO. Knox is one of the most populous municipalities in Victoria with almost 151,000 residents, located in the foothills of Mt Dandenong. According to its local council, Knox residents value their green spaces and are keen to preserve the natural environment and biodiversity in the municipality. The community has a diverse multi-cultural heritage, with its citizens coming from 150 different countries and speaking 54 languages.

But Knox also has a strong light manufacturing base, a large shopping centre and has been designed for cars, with minimal Public Transport Services. Knox has experienced some of the negative aspects of outer suburban “sprawl”, putting strain on its social infrastructure, such as housing and health services.

Recognising the need to address urban design challenges, to engage the community in revitalising Knox and to attract potential investors, Knox City Council has been working with Arup to re-cast the City’s identity, through the development of a Brand Strategy.

This strategy involves wide-ranging consultation with local community members and industry and a range of other stakeholders to develop “Brand Knox” – unpacking the values of the municipality, its purpose and its vision for the future. It involves a placemaking exercise, helping to create the future vision for the city, and to express its aspirational identity.

The office of Knox Central has been created, and a CEO recently appointed, for the purpose of progressing “Brand Knox”, including engagement and communications strategies and briefs to lead change at local government, household and business levels. These in turn can guide the development of spatial design and architectural briefs for priority areas to be addressed.
The Knox experience include the facilitation of the entire process by Knox City Council, recognising its central role in guiding the creation of a sense of shared community value and in rolling out “Brand Knox” to local and external audiences. Another important lesson is early and widespread consultation with all stakeholders early in the process, so that the brand is co-created.


A Climate Smart Precinct is a potential platform to implement “industrial symbiosis”. This consists of place-based exchanges of materials, water, energy and information among different industries or organisations, which that yield a collective benefit greater than the sum of individual benefits that could be achieved by acting alone.

Within a precinct, the master plan can promote the recycling and reuse of waste between tenants; utility or infrastructure sharing; and even the joint provision of services that meet common needs, such as transportation or ICT services. The master plan should encourage businesses to enter the precinct based on the capacity of their resource inputs/outputs to complement those of existing businesses and households, in addition to the overarching Climate Smart Precinct vision.

**CASE STUDY: INDUSTRIAL SYNERGIES IN THE KWINANA INDUSTRIAL AREA, WESTERN AUSTRALIA**

The Kwinana Industrial Area (KIA) is 2400 hectares of major resource processing industrial real estate in south-western Australia. The area is a core driver for the Western Australian economy, with a total economic output of AUS$16 billion and employment of 4,800 people directly and 28,000 indirectly.

The Kwinana Industries Council (KIC) was established in 1991, as an incorporated business association with its membership drawn from the local industries active within the KIA. The scope of the KIC's focus on minimising impacts on the local marine environment has expanded to encompass a broad range of resource efficiency issues under the Kwinana Industries Synergy Project. As of 2008, 41 synergy projects were underway within the KIA: 32 were by-product synergy projects, where water, energy or other process stream by-products are recycled back into the industrial system; 15 were synergies arising from shared use of utility infrastructure.

An example high-value synergy is the capture of food-grade CO\textsubscript{2} from the CSBP ammonia plant. Rather than venting this CO\textsubscript{2} into the atmosphere as waste gas, CSBP now provides it at low cost for reuse in soft drinks, beer, local water treatment and as dry ice for the livestock industry. This project alone saves up to 43,000 tonnes of CO\textsubscript{2} emissions each year.

The benefits of the Kwinana Industries Synergy Project encompass standard economic benefits, such as lower operational costs and new resource sale opportunities. However, the benefits of the project also extended beyond conventional business case impacts, including improved resilience to resource scarcity (such as periods of drought), additional local employment, better relations between businesses and the community and environmental benefits such as:

- water savings of 6,200 gl per year;
- energy savings of 3,750 Tj per year;
- waste savings of 471,800 tonnes per year;
- gas emissions reductions of more than 134,000 tonnes per year; and
- CO\textsubscript{2} emissions reductions of more than 280,000 tonnes per year.

The strong involvement of local industry stakeholders in the Kwinana Industries Synergy Project, through their membership of the KIC, helped promote the high levels of trust between companies that enabled synergy projects to succeed. The interweaving of these industrial processes reflects the participants’ sharpened appreciation of the value of collaboration and common desire to see the region prosper well into the future.

Based on the existing innovations at Lochiel Park, and the potential of Bowden Village and Tonsley Park. South Australia could be positioned as an innovation hub for the development of interactive tools for energy information and behavioural change. For example, trialling precinct-wide release of real-time data displays within the precinct can educate residents about sustainable choices in an engaging way and can contribute to a culture of innovation and arts around sustainability. Running an informatics competition for designers and developers could kick-start this process of refining the best method for communication and impacting behaviours.

**CASE STUDY: URBAN INFORMATICS AT LOW2NO, HELSINKI**

Low2No is a project in Jatkasaari, Helsinki to redevelop 100 hectares in an old industrial port with mixed-use development and infrastructure, led by SITRA (the Finnish Innovation Fund). ARUP is part of the winning consortium now designing the architectural and strategic solutions for the site. It is also pioneering activities to raise the level of awareness and sophistication of Finland’s national sustainability debate. To this end, the project will be adopting a user-centred approach to developing the design of the site, a world first in many regards.

An urban informatics workbook has been developed to inform this approach. Urban informatics is the practice of creating interactive buildings, spaces and cities – combining physical spaces with digital technologies such as networked sensors, displays and pervasive wireless broadband to create a physical experience. The workbook looks at how to embed data feedback into everyday life, connecting technology to people to drive behavioural change and providing an interactive, living version of the sustainability framework.

Solutions explored include projecting energy profiles onto buildings and the balconies of individual apartments; smart bicycles; rewards cards that track sustainable choices; pervasive information travel; real-time information indicating the performance of natural systems; and interactive community notice boards. It is expected that urban informatics approaches would be able to garner a reduction in carbon in the order of 5-15%, whilst enabling a higher quality of life.

**SUGGESTIONS**

21. Brand both Bowden Village and Tonsley Park as Climate Smart Precincts.
22. Develop a range of future scenarios for the site that can inform the master plan for development and communicate positive visions of quality lifestyles and sustainable business environments.
23. Conduct a comprehensive place-making exercise for the Tonsley Park precinct. This should clearly distinguish the precinct and its features from mainstream developments, articulating the benefits for prospective residents, businesses and service operators. These should be attractive to both “early adopters” of technology and sustainability, as well as the broader community.
24. Create a brand strategy based on scenarios and place-making work, to attract support and interest from investors, existing neighbours to the site, potential residents, businesses and relevant authorities.
25. Encourage businesses to enter the precinct based on the capacity of their resource inputs/outputs to complement those of existing businesses and households, as well as the overarching Climate Smart Precinct brand.
26. Build on the experience of real-time data sharing with residents at Lochiel Park to explore the use of urban informatics at Tonsley Park, engaging the community in sustainable practices and reinforcing the Climate Smart Precinct vision.
**Principle Six**

**Explore New Models of Collaborative Governance**

**Discussion Points**

- Adopt governance models that manage risk and share accountability between government, the private sector and the community.
- Encourage community involvement in precinct governance structures to ensure that the end-users of the precinct engage in ongoing sustainable behaviours.
- Provide opportunities for residents to own, operate and manage the assets on the site, and then reap the economic rewards.
- Ensure that models of governance assist in locking in precinct stakeholders' commitment to jointly achieving precinct goals over time.

**Discussion Focus**

Climate Smart Precincts offer the opportunity to explore alternative forms of governance, at every stage of the process, from creating the vision, to living and working in the community.

To balance the needs of the various public, private and community stakeholders involved in each of those stages, the right mechanisms are needed to manage risk and returns to each party, and to encourage continuing innovation. The multiple public-private partnership models available, including variations on the “Build-Own-Operate-Transfer” model, can provide government with options for sharing risk and maximising the scope for innovation by engaging with the private sector in getting the project off the ground. But to be fit-for-purpose in the context of designing and implementing truly sustainable urban developments, it is critical to involve the community from the outset, and to engage the end-users of the development in ongoing sustainable behaviours. We need to develop new models that secure the commitment of all precinct participants to jointly achieving its overarching objectives into the future.

Invoking local residents and workers in planning decisions is an essential part of both risk-management and driving innovation. Strong and ongoing engagement with the community must be built in to private-public partnerships to reduce the risk of community-insensitive design and operation, and to ensure ongoing performance against precinct objectives once the precinct is established.

Community engagement was critical at each stage of the development process. The local non-profit citizens’ association, Forum Vauban, was contracted by the City of Freiburg to engage participants and allow them to influence the vision, planning and construction. One important outcome was the rethinking of cars as an optional, up-front expense – rather than being built-in to the design of each house. This has increased residents’ awareness of the true cost of vehicle infrastructure, such as parking spaces, and the potential household savings if car use is avoided.

In addition, co-housing “construction communities” were built in to the vision for the Vauban precinct. Construction communities are collections of individuals who together share in the design and financing of co-housing projects (typically medium density), allowing them to design and construct at scale. The arrangement allows the sharing of both the financial risks of construction projects, as well as the financial benefits – with Vauban's residents seeing cost savings up to 25%. Perhaps even more importantly, construction communities fostered the development of deep connections, and a shared sense of ownership, within the Vauban community.

We know from other developments that empowering the community to buy in to the precinct vision will improve sustainability performance once the precinct is operational. Involving the community in governance structures and the management of precinct assets can in turn create more climate-resilient developments, with reduced dependence on centralised infrastructure.

Governance models for Climate Smart Precincts could also include opportunities for residents to own, operate and manage the assets on the site, and then reap the economic rewards. This reinforces sustainable behaviours and consolidates a strong identity for the precinct, providing a chance to re-invest income back into the community.

For example, community ownership of local energy assets could ensure security of local supply. Local renewable energy could generate a steady stream of income, which could be re-invested for the benefit of the community. These sorts of models clearly have financial implications for different stakeholders in the precinct’s development, which need to be considered. They also alter traditional BBSR models for the transfer of risk and ongoing management of the development, with a number of potential benefits and challenges in each case. These implications need to be factored into the business case for the precinct as a whole.

In light of its early stage of development, Tonsley Park presents ample opportunity to explore the merits of various models for community engagement in governance structures and ownership or management of precinct assets, particularly around energy generation.
**CASE STUDY: CROSS-SECTORAL PARTNERSHIPS FOR SUSTAINABLE DEVELOPMENT AT THE ECOVILLAGE, CURRUMBIN, QUEENSLAND**

The Ecovillage at Currumbin is a greenfield site in a semi-rural part of the Gold Coast. With 144 homes and a village centre across 110 hectares, 50% of its area comprises an environmental reserve and 30% is open space.

The goal of the private developer, Landmatters, was to establish a sustainable, diverse and integrated community for residents of various socio-economic backgrounds. To this end, the site offers many different sized houses, producing a wide variety of price points. These range from small studio apartments to large lots with their own private creeks and forests.

Sustainability features were integrated into all housing developments in the Ecovillage, but Landmatters avoided imposing a universal sustainability premium. Costs were instead recovered through an ecological premium levied on those high-end lots that reserved significant portions of natural amenity for their own use.

From early on, the developer and the Gold Coast City Council approached the project in partnership, working to ensure that all technical innovations met the local approvals process. Community engagement has also played an increasing role, maximised both through establishing a series of body corporate entities as well as the Ecovillage Community Company. This body corporate sets by-laws mandating solar PV systems and strict architectural guidelines that emphasise energy efficiency and passive solar design, while the Ecovillage Community Company manages some shared assets and continues to invest its returns in the community over time.

The result is a community that is self-sufficient in energy, water and waste-water treatment, with a mix of services whose management is open to community participation.

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**SUGGESTIONS**

27. Examine the opportunities for and merits of various models for community engagement in governance models for Tonsley Park, based on experiences in other communities in Australia and internationally.

28. Explore the potential merits of community ownership and/or management of on-site assets at Tonsley Park, examining opportunities for local residents and businesses, as well as the implications for the precinct’s business model.

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**PRINCIPLE SEVEN**

**ENCOURAGE TRIALLING, MONITORING AND EVALUATION**

**DISCUSSION POINTS**

- Design clear and achievable targets for individual communities; define measures for community and environmental performance and monitor progress.

- Plan and employ action research methods to trial and study the effectiveness of new technologies, community engagement techniques, governance structures and policy improvements.

- Specify measurement and verification systems for evaluating performance in building specifications, as well as building monitoring and evaluation methods into community establishment and engagement plans.

- Integrate monitoring and feedback, both qualitative and quantitative, as a dialogue with the community to build and strengthen community capacity, and create a narrative around success stories.

- Augment the evaluation of precinct success with questions that probe the replicability of technology solutions and programs to future developments.

- Ensure comparative performance measures between precincts.

- Promote the successes of technology solutions and programs, to drive broader uptake across similar precincts.

**DISCUSSION FOCUS**

Establishing aspirational sustainability goals for precincts, such as zero carbon, is important to convey a long-term, ethical mindset to the community. However, in practice, these goals on their own can seem too far away to influence immediate behaviour. Setting complementary goals that are achievable in the near term will raise community awareness of ongoing performance and provide a path towards the longer term aspiration. This in turn will create greater motivation and unity within the community in pursuing shared goals.

Learning by doing is a guiding principle for Climate Smart Precincts. A range of program evaluation and action research methods can trial and study the effectiveness of techniques to improve sustainability performance. These techniques may be technology solutions or behavioural modifications, and often both, measured through a set of qualitative and quantitative indicators. They are trialled and tested in a “live laboratory” environment, and continuously monitored, evaluated and improved in an annual basis.
CASE STUDY: EVALUATION OF RESULTS FROM THE IN-HOME DISPLAYS AT LOCHIEL PARK, ADELAIDE

Amongst its comprehensive range of sustainability features, all houses in Lochiel Park are fitted with an “eco-vision” system which allows individual households to monitor their own behaviour for water and energy use, greenhouse gas emissions and gas use. Highlighted below are some results recorded from these real-time in-home displays:

- Across all the houses monitored between April 2010 (10 houses) and March 2011 (28 houses), the net annual electricity consumption is 2380 KWh per house. This is currently tracking at close to a 84 per cent reduction against the 2004 baseline. This is about half that of Adelaide generally (which is 5000 kWh) and 53 per cent less than the South Australian average at 2011 levels.
- At present some Lochiel Park residents are energy positive, returning energy to the grid and making money.
- Greenhouse gas reduction is tracking at a 55 per cent reduction against the 2004 baseline.
- Average daily water consumption is 280 litres a day, about half that of the consumption per household in Adelaide (520 litres). This is tracking at over 60% against the baseline target, even without the recycled water network being connected.
- Some residents are almost entirely running their households on rainwater.
- A number of residents have lost weight as a result of using the bike scheme (18 kg loss from 5000km travelled in 12 months).
- The community garden integrates the greater community with 25% of the plots being leased to surrounding community members.

Monitoring, evaluating and improving the success of a community across its operational life can add significant long-term value to the property developer, as it can to the community itself. The costs of this monitoring can be expensive when retrofitting it into the built form, as too is additional research carried out beyond the regular operations of the community. Specifying and integrating these data gathering methods at the design stage will make it far more cost effective, easier to achieve, and lead to more rapid evaluation and improvement.

A well-adapted precinct is one that capitalises on its strengths. For this reason, evaluating the success of the precinct is best done against specific criteria mapped out in the planning phase. To understand how the methods employed can be extended to other precincts, and how different precincts compare, a set of common criteria should be developed across each precinct. This will establish a common framework for evaluation. Innovating, trialling and showcasing new technologies, new policies, and new community management techniques is the defining feature of the Climate Smart Precincts program. Open and transparent monitoring, along with well-designed research, can establish a culture for continuous improvement, and encourage the sharing of lessons between precincts. It can also reduce the risks of failed technology trials.

Promoting successes will boost confidence among stakeholders, such as the property sector, to embark on similar developments. It can also increase the desirability of these new communities as a place to live and work.

CASE STUDY: USING BENCHMARKING CRITERIA IN IBM’S SMARTER CITIES

IBM has used a quantitative evaluation approach, called the Smarter Cities assessment tool. It aims to measure the adoption of advanced smart city infrastructure and technologies in a number of dimensions, across people, business, communications, transport, energy and water. Using weighted scores for the take-up of different technologies, ten cities were compared across these multiple dimensions.

Cities that are under or over-performing in one particular area, such as transport for example, are graphically represented against city averages or benchmarks, providing useful insights into the strengths and focus areas for technological improvement.

Government policy makers and advisors can use trending evaluation tools such as these to understand where there is most room for improvement in city domains with rapid technology growth, such as government services, public safety, transport, energy, water, education and healthcare.

SUGGESTIONS

29. Building on the robust platform established at Lochiel Park, run a planning exercise to set clear targets and monitoring/evaluation mechanisms for sustainability performance at both Bowden Village and Tonsley Park.
30. Develop a comprehensive and transparent plan for reporting performance, incorporating qualitative and quantitative criteria, to provide a robust evidence base that can be used to inform other developments.
31. Work with other State Governments, as well as peak bodies such as the Property Council of Australia and the Green Building Council of Australia, to develop a common evaluation framework for Climate Smart Precincts that ensures that solutions are cost effective, replicable and promote broader uptake.
32. Establish an action learning and evaluation framework as part of the monitoring plan that enables the trial and evaluation of different technologies and community engagement techniques to be shared and promoted as Climate Smart Precinct solutions.
SUMMARY OF SUGGESTIONS

Listed below are the suggestions arising from the Climate Smart workshop discussions in South Australia.

As noted in the introduction of the discussion of Workshop Outcomes, many of the suggestions are directed at either Bowden Village or Tonsley Park. The hope is that these suggestions inform the future development of each of these sites, so that they can become iconic Climate Smart Precincts that provide guidance and inspiration to other developments.

Other suggestions are intended to apply to Climate Smart Precincts in general, with the hope that they provide some guidance to individual public and private sector members of the Climate Smart Precincts initiative.

In every case, the suggestions will help to inform the further development and roll-out of the Climate Smart Precincts of the future.

PRINCIPLE ONE
BRING THE COMMUNITY ALONG FOR THE WHOLE JOURNEY

1. Create and stimulate a sense of community identity at Tonsley Park, for example through farmers markets, artists’ studios and events.
2. Identify and deploy best practice models for community engagement with leading bodies such as the International Association for Public Participation.
3. Create an education showcase at Tonsley Park, so that it becomes a destination in itself and provides inspiration for other communities.

PRINCIPLE TWO
USE TECHNOLOGY TO MAKE PRECINCTS SMARTER

4. Establish both Bowden Village and Tonsley Park as showcases for intelligent technologies and systems, to minimise their carbon footprint and bolster their resilience to future climate change impacts.
5. Consolidate the position of Bowden Village and Tonsley Park as Climate Smart technology showcases through public access to case studies, resources and trial data, to inform future precinct developments.
6. Utilise the size and scale of Tonsley Park to trial as many components of the smart grid as possible, to contribute to the roll-out of smart grid solutions in Australia.
7. Draw upon relationships with local and adjoining research and TAFE facilities to examine different scenarios and mechanisms that can make various technologies viable in the broader marketplace.
8. Encourage a flexible approach to planning that deploys technologies and systems that are currently available in an incremental manner, whilst retaining sufficient flexibility to build in innovations as they become technically feasible and commercially viable.
9. Bolster the case for distributed energy and micro-grids by exploring ways to mandate or incentivise households and businesses within the Tonsley Park precinct to purchase energy generated on-site.
10. Contribute to the achievement of the State’s Renewable Energy Target by examining ways to mandate or incentivise Tonsley Park households and businesses to purchase renewable energy, prioritising particular energy sources as necessary.
11. Explore arrangements for demand side management contracts between building owners and energy utilities to finance smart building solutions within commercial buildings in Bowden Village and Tonsley Park.
12. Promote regulatory reform of the energy market to recognise the benefits of distributed energy, supported by evidence gathered from Climate Smart Precinct developments.
13. Investigate smarter ways to get around by exploring iconic and integrated transport solutions for Tonsley Park.
14. Encourage tele-working and distributed service delivery at Bowden Village and Tonsley Park.
15. Provide free access of information to energy data, paving the way for systems that would allow payment for energy data as a basic service for all energy customers.

PRINCIPLE THREE
BROADEN THE DECISION-MAKING FRAME TO RECOGNISE A WIDE RANGE OF ECONOMIC BENEFITS

16. Develop a framework enabling an expanded cost-benefit analysis at Tonsley Park. This should include the long-term social, environmental and broader economic opportunities and benefits of a Climate Smart Precinct
17. Identify the interests of and potential benefits to a broad range of public and private sector stakeholders, examine their threshold levels of risk and return, and their respective “tipping points” for participation in the Tonsley Park development.
18. Promote outcomes from Climate Smart Precincts to provide an evidence base to challenge financial templates and assumptions in future developments.
PRINCIPLE FOUR
PLAN HOLISTICALLY AND IN PARTNERSHIP

19. Create mechanisms for greater collaboration between state government departments, agencies and authorities to align the opportunities of a Climate Smart Precinct with a range of existing government policy objectives.

20. Engage the private sector at an early stage of concept planning, within a framework of agreed targets consistent with the precinct vision. This will encourage innovative “whole of precinct” technology solutions and inter-connected systems, in addition to creative approaches to place-making and incentivising sustainable behaviour.

PRINCIPLE FIVE
DESIGN WITH FUTURE RESIDENTS IN MIND AND END GOALS IN SIGHT

21. Brand both Bowden Village and Tonsley Park as Climate Smart Precincts

22. Develop a range of future scenarios for the site that can inform the master plan for development and communicate positive visions of quality lifestyles and successful business environments.

23. Conduct a comprehensive place-making exercise for the Tonsley Park precinct. This should clearly distinguish the precinct and its features from mainstream developments, articulating the benefits for prospective residents, businesses and service operators. These should be attractive to both “early adopters” of technology and sustainability, as well as the broader community.

24. Create a brand strategy based on scenarios and place-making work, to attract support and interest from investors, existing neighbours to the site, potential residents, businesses and relevant authorities.

25. Encourage businesses to enter the precinct based on the capacity of their resource inputs/outputs to complement those of existing businesses and households, as well as the overarching Climate Smart Precinct brand.

26. Build on the experience of real-time data sharing with residents at Lochiel Park to explore the use of urban informatics at Tonsley Park, engaging the community in sustainable practices and reinforcing the Climate Smart Precinct vision.

PRINCIPLE SIX
EXPLORE NEW MODELS OF COLLABORATIVE GOVERNANCE

27. Examine the opportunities for, and merits of, various models for community engagement in governance models for Tonsley Park, based on experiences in other communities in Australia and internationally.

28. Explore the potential merits of community ownership and/or management of on-site assets at Tonsley Park, examining opportunities for local residents and businesses, as well as the implications for the precinct’s business model.

PRINCIPLE SEVEN
ENCOURAGE TRIALLING, MONITORING AND EVALUATION

29. Building on the robust platform established at Lochiel Park, run a planning exercise to set clear targets and monitoring/evaluation mechanisms for sustainability performance at both Bowden Village and Tonsley Park.

30. Develop a comprehensive and transparent plan for reporting performance, incorporating qualitative and quantitative criteria, to provide a robust evidence base that can be used to inform other developments.

31. Work with other state Governments, as well as peak bodies such as the Property Council of Australia, and the Green Building Council of Australia, to develop a common evaluation framework for Climate Smart Precincts that ensures that solutions are cost effective, replicable and promote broader uptake.

32. Establish an action learning and evaluation framework as part of the monitoring plan that enables the trial and evaluation of different technologies and community engagement techniques to be shared and promoted as Climate Smart Precinct solutions.

A number of these suggestions provide an ongoing policy agenda for the future work of the Climate Smart Precincts initiative, specifically:

- Highlight best practice and potentially develop a kit for Governments and developers to identify and deploy best practice models for community engagement, working with leading bodies such as the International Association for Public Participation.

- Working with research institutions and other interested parties, lead work on examining scenarios and mechanisms that can make various technologies viable in the broader marketplace. Develop the business cases to support this work.

- Promote regulatory reform of the energy market to recognise the benefits of distributed energy, supported by evidence gathered through practice within Climate Smart Precinct developments.

- Demonstrate arrangements for demand side management contracts between building owners and energy utilities to finance smart solutions within commercial buildings. This work will inform future developments in Australia and around the world.

- Investigate the provision of free access to energy data as a basic service for all energy customers.

- Working with integrated research economists, develop resources and/or a methodology for an expanded cost-benefit analysis framework that includes the long-term social, environmental and broader economic opportunities and benefits of a Climate Smart Precinct to a broad range of stakeholders.

- Examine examples of community-focused governance and ownership models that might work in precincts in Australia and internationally.

- Explore the potential merits of community ownership and/or management of on-site assets, particularly energy generation assets. This would include examining opportunities for local residents and businesses, as well as the implications for the business case for a Climate Smart Precinct development.

- Develop best practice monitoring and evaluation platforms for sustainability performance at precinct level, incorporating qualitative and quantitative criteria.

- Working with other State Governments, peak bodies such as the Property Council of Australia and the Green Building Council of Australia, develop an evaluation framework for Climate Smart Precincts that is applicable to other developments.
The Climate Group is an independent, not-for-profit organisation working internationally with government and business leaders to advance smart policies and technologies to cut global emissions and accelerate a low carbon economy. Its global coalition of 78 leading companies, states, regions and cities around the world recognise the economic and environmental imperatives of taking decisive action now. The Climate Group was founded in 2004 and has operations in Australia, China, Europe, India and North America.

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Disclaimer: the companies associated with this work have contributed to this document, but do not necessarily endorse all content contained within.

THE CLIMATE GROUP

The following companies are participants in the Climate Smart Precincts Initiative: