

2005 Roadmap to a desertSMART Town Evaluation

Project Evaluation

March 2013

ABSTRACT

The “2005 Roadmap to a desertSMART Town” was an ambitious document and the first community driven sustainability plan for Alice Springs. This evaluation documents how much progress has been made against the goals of the Evaluation and provides recommendations for the development of further sustainability initiatives in Alice Springs.



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Abbreviations

ASC	Alice Solar City
ASTS	Alice Springs Town Council
AWS	Alice Water Smart
ALEC	Arid Lands Environment Centre
CAD	Central Activity District
CATIA	Central Australian Tourism Industry Association
CDU	Charles Darwin University
CSAT	Centre for Sustainable Arid Towns
DBIRD	Department of Business, Industry and Resource Development
DNRETA	Department of Natural Resources, Environment and the Arts
DKA	Desert Knowledge Australia
COOLmob	Used to refer to both Desert Knowledge COOLmob and desertSMART COOLmob
NTG	Northern Territory Government
PWC	Power Water Corporation

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1) Executive Summary

It is eight years since the Centre for Sustainable Arid Towns produced the *2005 Alice Springs Roadmap to a desertSMART Town* (the Roadmap) in collaboration with ALEC, DKA, DNRETA, COOLmob and DBIRD. The Roadmap was a document which aimed to give “mandate and direction to existing groups”, “exchange knowledge and vision”, and bring together the community, government and business to “practice the practice of community” (CSAT, preface). It was the first document broadly addressing sustainability issues for the town and aimed to encourage doing more with less, clever resource use and to distinguish Alice Springs as a vibrant desert community (ibid).

Creating space for project ideas to crystallize and grow by bringing interested parties together was the key success of the Roadmap. In 2005, there were a variety of working groups and committees discussing sustainability around Alice Springs. Roadmap community forums and the finished document drew together these discussions together into a vision for Alice Springs available to anyone interested in moving towards greater sustainability. With a more coherent vision and a range of creative ideas about how to achieve that vision much has been achieved.

Alice Solar City and Alice Water Smart have been the headline sustainability successes since the Roadmap was written. Although it would be an exaggeration to suggest that it was the Roadmap alone which catalyzed the establishment of these two programs, the need for major energy and water efficiency programs and the promotion of renewable energy were key priorities identified at the Roadmap community forums and by many organizations who had input into the final document. The broad scope of the Alice Solar City and Alice Water Smart projects have also captured many of the smaller projects discussed as the Roadmap was developed.

While the Roadmap was invaluable in articulating a community vision, hindsight shows there were a number of areas which were not covered. The document itself states, “the 2005 Roadmap makes a start” (ibid) rather than aiming to cover all bases. It is hoped that the following recommendations will assist in improving the development of future Roadmap type documents in Alice Springs as the town moves towards the goals of improved sustainability and resilience.

2) Key Recommendations

- 1) As Alice Solar City and Alice Water Smart come to a close, the development of a new Roadmap is highly relevant as a clearly expressed, holistic community vision for sustainability in Alice Springs will assist in progressing key projects in this area.
- 2) The development of a new Roadmap should include expertise from a broad range of industries and the community to ensure opportunities and roadblocks are clearly articulated.
- 3) A new Roadmap should work beyond the original four areas of energy, water, waste and built environment to enable the new Roadmap to operate as a global sustainability blueprint for Alice Springs.
- 4) A new Roadmap needs a clear vision clearly linked with achievable actions assigned to relevant organizations.
- 5) The goals of a new Roadmap need to be embedded in core business of desertSMART COOLmob, DKA and ALEC.
- 6) The development of a new Roadmap should invest heavily in developing partnerships which will enable actions to be implemented over the proposed life of the project.
- 7) A new Roadmap will need to establish a Steering Committee for both the development and implementation of the Roadmap to ensure it has credibility in the broader community and to help embed it in the core business of other organizations.
- 8) A long term, cross-organizational approach with significant funding and bipartisan political support will achieve the most success.
- 9) A new Roadmap should better celebrate successes along the way clearly linking them to the objectives of the Roadmap.
- 10) Public, 'State of the Environment' type reporting on key environmental statistics in Alice Springs such as energy and water usage patterns or waste tonnage and greenhouse gas emissions would enable better programs to be developed, implemented and assessed.

3) Background and Purpose of Evaluation

Alice Springs has seen a variety of sustainability-oriented initiatives operate in recent years. The Arid Lands Environment Centre is one organisation which has worked on a variety of these projects since its establishment in 1980. In more recent times, desertSMART COOLmob has worked as the sustainability arm of ALEC although the project was initially auspiced through DKA. COOLmob has initiated a variety of sustainability focused projects such as home energy and water audits, the production of fact sheets, practical workshops, forums and seminars. The CSAT was another initiative focused on sustainability outcomes established in the mid 2000s, which provided services on a fee-for-service basis. CSAT was the primary author of the Roadmap and a driving force behind its establishment.

The desertSMART Roadmap was a first attempt to unify sustainability oriented projects in Alice Springs under one banner while also working to involve community members, other community organizations, DKA, Power Water Corporation, the Alice Springs Town Council and the NT Government.

This Evaluation aims to assess how much progress has been made between 2005 and 2012 on achieving the goals of the Roadmap in the Alice Springs Town Council area. The Evaluation also aims to distinguish which successes can be directly attributed to the Roadmap document and process, and those catalyzed elsewhere. Many successful projects have been undertaken by other organizations, ASC and AWS in particular.

Producing this evaluation also aims to celebrate successes of the original Roadmap and communicate key learnings from the process, in order to build momentum in the broader Alice Springs community towards developing and implementing further sustainability initiatives.

The *70 Actions to Make Alice Springs a desertSMART Town (70 Actions)* document was a major influence on the Roadmap. Drawn together by Glenn Marshall, Brendan Meney and others, the 70 Actions compiled the thinking and goals of different groups in Alice Springs including the ASTC Waste Management Advisory Committee, the Alice Springs Solar Cities Consortium, the DNRETA Alice Springs Water Strategy Team and the Alice-in-10 Built Environment Committee. Some of these different groups then took on the task of facilitating community workshops which informed the development of the Roadmap. In the area of built environment, the 70 Actions informed the structure of the community workshop. In other areas, their influence is not as explicit although it remains clear they were a guiding force.

The 70 Actions have been considered in reasonable depth in this evaluation partly because of their considerable influence but also because the goals of the Roadmap itself are very general and difficult to measure. Progress towards improved sustainability has been measured against the 70 Actions and the Directions (goals) of the Roadmap itself.

4) Methodology

This evaluation has drawn on the following sources:

- The original *Roadmap*
- The *70 Actions*;
- Interviews (in person and via email) with key participants in the original planning process;
- Information from staff coordinating programs identified in the Roadmap and the 70 Actions;
- An online survey of participants in the original community forums;
- Data about water and CO2 savings associated with and of the 70 actions, where available and;
- Data about trends in Alice Springs' energy and water use since 2005 where available.

The evaluation aims to critically assess the Roadmap based on:

- The number of Roadmap goals achieved;
- The number of actions from the 70 Actions document that have been completed to date;
- The extent to which the Roadmap itself can be seen as a significant factor in achieving given actions/goals;
- CO2 and water savings attributable to the Roadmap (where information is available) and;
- The usefulness of the Roadmap in terms of creating a framework for all sustainability related initiatives in Alice Springs.

The Evaluation aims to be a broad appraisal of the successes of the Roadmap rather than a comprehensive analysis of each goal or action. There was not enough time or resources for an analysis of this depth.

Further, as the original Roadmap did not outline specific indicators for success, this Evaluation can only appraise the project in terms of its perceived impact seven years on by measurement against actions, goals and more global energy and water consumption data. It has been difficult to measure CO2 and water savings attributable to the Roadmap as a direct result of the lack of specific indicators.

It is also difficult to definitively assess the extent to which the Roadmap contributed to getting specific initiatives off the ground. This Evaluation can only suggest where it is likely that Roadmap was a contributor. As such, where the evaluation states that the establishment of a program was influenced by the Roadmap, the suggestion is that the Roadmap was one influence among many rather than the sole or critical factor.

Finally, where outcomes are discussed in each area, they are discussed only in relation to the goals identified in either the Roadmap or the 70 Actions. Many more achievements have been made by ASC and AWS in particular, far beyond the scope of this report.

5) Evaluation Findings

Routes and Destinations (overall analysis)

Roadmap Achievements

Given a relative absence of ongoing coordination or resourcing it is surprising how much progress against the broad goals of the Roadmap has been made since 2005. While many of the ambitious goals set in the Roadmap itself remain works in progress, about thirty of the actions identified in *70 Actions to Make Alice Springs a desertSMART Town* have been at least partly completed. Perhaps these successes can be attributed to the success of the Roadmap in collating the community's ideas – ideas which had been percolating in town for many years but had not been linked together or clearly articulated (Meney, pers. comm.).

Greatest progress against Roadmap goals has been made in the areas of energy and water – those areas where dedicated programs have been established and funded over time. Smaller programs such Desert Knowledge Australia COOLmob (later desertSMART COOLmob) which conducted energy and water efficiency audits and acted as an information hub assisting Central Australians to live more sustainable lives were an important precursor to larger initiatives like ASC and AWS. ASC and AWS clearly demonstrate how much can be achieved when the vision of the community and significant government investment coalesce. The benefits of these programs are environmental, social and economic.

In comparison, although some progress has been made in the areas of built environment and waste, a lack of coordination and funding has meant that progress was slow. Further, some of the achievements in these two areas have come out of the ASC and AWS programs and cannot be attributed to efforts to improve environmental outcomes in the areas of waste or built environment specifically.

Communication Outcomes

Although the Roadmap has been an influential document, recognition of the desertSMART concept is by no means universal in Alice Springs. Many people with an interest in sustainability who were in town in 2005 remember the development of the Roadmap. Many people contacted in the course of the Evaluation however, had never heard of the Roadmap document and were genuinely surprised to hear that the project they were working on had been mentioned in a document produced almost a decade ago.

Additionally, it has mainly been ALEC and COOLmob who have used the 'desertSMART' brand, rather than a broad range of organizations and businesses as originally envisioned. A more integrated and strategic approach will be needed to collaboratively define 'desertSMART' and if Alice Springs is to be widely known as the 'desertSMART Town'. The use of art and performance to promote the concept is another area where the original goals of the Roadmap have not been achieved. Other initiatives such as an open house program with specific desertSMART educational outcomes identified in the Roadmap have not been actioned, although the Sustainable Living House (a joint project of ASC and COOLmob) achieved some similar outcomes (Alice Solar City 2013).

Original attendees of the Roadmap planning sessions were also contacted to learn about their perceptions of the Roadmap's influence. Only four participants responded to the survey. Those who did respond said there was only some recognition of the Roadmap in the

community but that Alice Springs was more desertSMART now than in 2005. Energy was rated as the area of greatest improvement and built environment as the area with least improvement.

Networking Outcomes

A key networking success of the Roadmap was the launch of *70 Actions to Make Alice Springs a desertSMART Town* by the Chief Minister Clare Martin in 2005 (Crowe, pers. comms.). Facilitated by Desert Knowledge Australia, the launch helped raise the profile of both the Roadmap and associated actions (ibid). In the early stages of the Roadmap process, support from key organizations such as ALEC, CSAT, DKA, COOLmob, DNRETA and DBIRD was crucial to the profile and legitimacy of the Roadmap. DKA was also involved in utilizing the Alice-in-Ten project to build support for the goals of the Roadmap as iconic Alice Springs projects (ibid).

Although there was much enthusiasm generated in the desertSMART planning process alongside political and organizational support garnered by the work of organizations such as ALEC, CSAT and DKA, strong networks to progress the goals of the Roadmap have not persisted to the present.

A \$25 000 desertSMART Consultancy was funded by the NT Government in 2006 to improve desertSMART networks and progress the implementation of the Roadmap itself (Meney, pers. comm.). Immediately following the establishment of the Roadmap, a considerable amount of work also was done by CSAT, ALEC, DKA, CATIA, PWC and Brendan Meney Architects to develop the desertSMART concept, particularly in the areas of training, branding, certification and networking. However, material produced by the desertSMART consultant Jacinta Hill was not as widely circulated or as well known as the original Roadmap document and a detailed analysis of her work was not possible as a part of this Evaluation.

ALEC also submitted two grant applications to the NTG for funds to progress the Roadmap process but both were rejected (Cocking, pers. comms.). Presently, COOLmob employs a desertSMART Project Officer but the position is focused on a variety of projects, of which the Roadmap is one. Despite these setbacks, in 2012 funding was secured for the completion of this Evaluation as well as to create a new Roadmap (desertSMART COOLmob, 2012).

As the ASC and AWS programs wind to a close, there is an opportunity for the desertSMART concept to reemerge as a way of linking together projects progressing sustainability outcomes. Resourcing and establishing an accepted definition of 'desertSMART' are two necessary steps in achieving this outcome. Part of this process could involve better articulating the relationship between DKA activities and 'desertSMART' activities as outlined in the original Roadmap. Better linkages between DKA and 'desertSMART' might also serve to better export Alice Springs' understanding of what it means to live desertSMART to other desert settlements nationally and internationally and utilize DKA's extensive desert networks.

Technical and Business Outcomes

Since the Roadmap was written, the development of technical expertise in the environmental sector in Alice Springs has been focused mainly in the areas of renewable energy and energy and water efficiency. The ASC, AWS and Bushlight programs have all contributed to strengthening industry knowledge in these areas. ASC also has a shop front

known as the Smart Living Centre where the general public can find out more about renewable energy and energy efficiency and COOLmob programs.

The desertSMART brand has not been widely used by Alice Springs businesses although some upskilling of staff has occurred through the ASC and AWS audit programs. For example, in cases where a school has received funding to upgrade its irrigation system through the Waterwise Schools program, training has been provided to grounds-keepers in how to use the new system (Diment, pers. comm.). AWS has also worked to up skill real estate agents to enable them to better manage water wastage on rental properties (Laidlaw, pers. comm).

Government Outcomes

Federal and Territory government investment in AWS and ASC as well as NT Government rebates on selected 'waterwise' products are likely to have contributed to sustainability outcomes, although it is difficult to assess how much. Rebates, vouchers and discounts on selected efficiency and RE products have increased uptake of hardware such as solar hot water services, rooftop PV arrays, improved garden irrigation, rain water tanks and smart meters. Again though, it was beyond the scope of this evaluation to assess the impact of these rebates on energy and water savings. Recent (unpopular) increases to the price of power and water are likely to act as an incentive for increased energy and water efficiency.

The previous Government's Climate Change Policy was also an ambitious and progressive framework for action around climate change mitigation and adaptation. Projects such as the Alice Springs Hospital Co-Generation Plant were funded through a six million dollar program aimed at reducing government greenhouse gas emissions and stimulating the green economy (Kieboom, pers. comm). Sadly, the current government has shelved this policy.

At a legislative level, the NT Government passed the Environmental Protection (Beverage Containers and Plastic Bags) Act in 2012 (Northern Territory Government, 2012). Unfortunately, a recent Federal Court decision found that the Act is not consistent with the requirements of the Mutual Recognition Act 1992 (Cth) (MR Act) (Northern Territory Environmental Protection Authority, 2013). However, credit must be given to the NTG for progressing important environmental outcomes at a legislative level regardless of the outcomes of current legal proceedings as well as to the ASTC who ran a pilot Cash for Containers beverage container refund scheme prior to the legislation being enacted (Alice Springs Town Council 2010, 22).

Roadmap Process

Involving the Alice-in-10 Built Environment Committee, CSAT, the NRETA Alice Springs Water Strategy Team, the Alice Springs Solar City Consortium and the Waste Management Advisory Committee in the development of the Roadmap helped to galvanize organizational support for the document and process. A strong community presence at the Roadmap workshops was another strength of the process. The employment of desertSMART consultant Jacinta Hill was another early success of the desertSMART project.

However, further analysis and editing of the Roadmap document would have made it a stronger and more accessible document. Clear and measurable goals would have enabled a more comprehensive review of the successes of the document and process. Similarly, without ongoing resourcing the implementation of the Roadmap has been inconsistent.

Waste

Only two of the Roadmap Destinations have been achieved between 2005 and the present, both through the Environmental Protection (Beverage Containers and Plastic Bags) Act (2012), recently the subject of legal action. Similarly, just three of the six actions identified in 70 Actions have been completed, one only partly. The absence of a dedicated working group aiming to progress towards a 'waste wise' Alice Springs and the absence of a long-term community visioning process around waste reduction has been the factors in this slow progress. No data was available about green house gas emissions associated with Alice Springs waste streams.

Improvement of the Landfill Site

The ASTC took over full operations of the town's landfill in July 2012. The landfill is now run as a business unit of the Council, aiming to achieve the Council's goal of 50% landfill reduction by 2030 (MyRegion 2012). Funding has also been secured to redevelop the landfill site into a regional waste management centre (Snowdon 2011).

The new facilities will provide recycling for green-waste, ferrous and non-ferrous metals, crushed concrete and road base, cardboard, white goods and e-waste (Buxton, G. 2012). While metals and e-waste will be sent to Adelaide, onsite-recycling facilities will be provided for other waste streams (Laan, pers. comm). Glass and concrete will be reused (ibid). The Tip Shop will also be redeveloped as a part of the project with salvage rates hoped to increase. It is expected that the new tip will significantly improve waste recovery in Alice Springs.

Waste Reduction Education

There have been no major waste reduction or litter reduction campaigns run by the ASTC since the Roadmap was written (Buxton, pers. comm).

Recycling

As mentioned above, Cocoa Cola Amatil's legal challenge to the NT Government's container deposit legislation has been a recent set back. The Council of Australian Governments meeting in April will consider whether an exemption to the Mutual Recognition Act (1992) would be made to enable the scheme to continue (Northern Territory Environmental Protection Authority, 2013). Currently, the Northern Territory Government will provide funds to ensure the scheme can continue in the short term, with a decision to approve an exemption to the Mutual Recognition Act (1992) likely at present.

Despite the legal proceedings currently unfolding, businesses such as Russ Driver, Territory and Cleanaway continue to provide various recycling services to the community and glass, metal, paper and cardboard can currently be recycled in Alice Springs.

Conclusion

Despite some progress in the area of waste reuse and recycling. Alice Springs is still a long way from being a leader in waste recycling and reuse technology as originally envisioned in the Roadmap. In particular, no progress has been made in reducing waste streams. Unlike the areas of energy and water where working groups have spread the responsibility of creating change across organizations, there has been no 'zero waste' type group convened.

This lack of coordination has had a negative impact on the achievement of waste reduction focused goals and improvements to waste management in Alice Springs since the Roadmap was written.

Energy

Although energy related initiatives in Alice Springs have not specifically aimed to progress the goals of the Roadmap, three of the four Destinations outlined have been largely achieved since 2005. Eleven of the nineteen actions identified in the 70 Actions have also been achieved. These considerable achievements can be attributed to the early enthusiasm of the Alice Springs community for solar technology and energy efficiency which culminated in a successful Solar Cities bid. In 2012, CDU estimated that activities of ASC are currently delivering greenhouse gas emission savings of more than 4300 tonnes per annum (Gerritsen et al 2012, 16).

There has been a long history of enthusiasm for solar technology in Alice Springs. What is important for this Evaluation is to note how the enthusiastic members of the Alice Springs community had already mooted the idea of Alice Springs as a Solar City as early as 2000 (Meney, pers. comm). Additionally, Desert Knowledge Australia had supported the idea of a "Solar Region" as put forward by the Solar City group (essentially ALEC, CATIA and Brendan Meney Architects) in 2001 (Alice Solar City, 2013). An early energy efficiency program was also run by Desert Knowledge Australia COOLmob which contributed towards improving community understanding of energy conservation and introduced the broader community to home energy efficiency audits.

Accordingly, when the Roadmap was developed in 2005, the strong focus on improving energy outcomes in Alice Springs is unsurprising. It seems highly likely that this long history of community driven thinking and planning around PV and energy efficiency was a key factor in the success of both the Solar City bid and the Alice Solar City program itself. The Roadmap played a part in this process by demonstrating how there was broad community support for improved energy outcomes in Alice Springs as evidenced in strong community and organizational participation in the development of the document.

Efficiency Outcomes

Data provided by PWC shows that although energy generation in 2011-2012 was slightly higher than in 2004-2005, it was lower than in 2005-2006. However, peak demand has risen fairly steadily over the past 10 years with a slight drop off in 2013 (Sawyer, pers. comm.). This rise in peak demand has been partly met by the increase in PV and improved energy efficiency. Other factors are the rising cost of power, the general downturn in Alice Springs businesses, climatic factors and population changes (ibid).

ASC has worked with the residential and commercial sector to dramatically improve energy efficiency in Alice Springs. 2627 residential audits and 200 commercial audits have been conducted as a part of the program (Latz, pers. comm). A significant part of the audit process is to establish where greatest energy savings can be made through improved efficiency. The program developed an extensive list of possible actions to improve efficiency and the most relevant actions are recommended to participants based on their usage patterns. Approximately 75% of ASC participants have reduced their energy use according to a review of the program (Garritsen et al 2013, 7).

ASC also worked with Tangentyere Council to improve energy efficiency in 60 town camp houses. Most residents felt that houses had improved thermal performance and were more comfortable after the upgrades had been made, although most thought that further improvements could be made (Tangentyere Project 2011). The project used a combination

of energy efficiency training and the installation of hardware such as evaporative air conditioning, shading, timer switches and one shot boosters (Broffman, pers. comm). About a third of participants recorded spending less on electricity after the project was completed (Tangentyere Project 2011).

Another important energy efficiency project undertaken as a part of ASC was a \$500 000 energy efficiency project at the Alice Springs Hospital (Latz, pers. comm.). Information about energy efficiency is also available to residents and businesses via the ASC website.

Outside large efficiency programs, relatively little progress has been made in the area of energy efficiency. Efficient, environmentally friendly transport options have not been explored in any depth and infrastructure improvements to amenities such as bike paths has not been extensive. Similarly, Territory Housing has not pursued energy efficiency improvements to the extent as envisaged by the Roadmap.

Renewable Energy Outcomes

At present about 3% of Alice Springs' power is generated from photovoltaic sources. At the outset of ASC, the installed PV capacity was 4kW. Currently it is approximately 4MW, an increase of 1000% (Latz, pers. comm). ASC has supported the installation of 277 residential PV systems and 39 commercial PV systems (ibid). Clearly, this is an enormous achievement. However, notwithstanding issues with increasing solar penetration and existing grid infrastructure, there is scope for further improvement.

CAT Projects and ALEC are presently working on a scoping study to further utilize rooftop solar in Alice Springs (Cocking, pers. comm.).

Incentive Schemes

A range of energy efficiency incentives have been made available through ASC including:

- Subsidies on the installation of PV systems;
- Subsidies on the installation of solar hot water services and other energy efficiency hardware and;
- Smart meters and cost reflective tariffs.

Free home energy audits could also be considered as an incentive. Similarly, recent increases in the price of energy have also acted as an incentive for energy efficiency.

Infrastructure

In 2010/11, PWC commissioned 3 dual fuel engines at the new Owen Springs Power Station outside Alice Springs with a transmission link to a new substation on Lovegrove Drive (Latz, pers. comm.). There is room for expansion at the Owen Springs site (Power Water Corporation, 2013). However, equipment will be gradually retired from the Ron Goodin Power Station in town. The commissioning of this new site has meant the Roadmap was unsuccessful in its goal of avoiding more power stations.

As mentioned above, 4MW of PV has been installed around Alice Springs. Iconic installations include:

- Crowne Plaza's 305kw flat plate rooftop PV array;

- Alice Springs Airport's 235kW dual axis tracking concentrating PV array;
- The Uterne Solar Power Station's 969kW single axis tracking flat plate PV array and;
- The Araluen Cultural Precinct's 180 kW flat plate PV array.

The Alice Springs Aquatic and Leisure Centre also utilizes 1700 square metres of black plastic piping to heat water, saving 350 tonnes of greenhouse gas emissions annually (Alice Solar City, 2013). Combined with smaller commercial and residential installations, the increase in renewable energy infrastructure has been considerable as a result of the ASC project.

It is also worth noting that about 60% of residential PV installations and 89.7% of commercial PV installations since 2008 have utilized ASC support (Gerritsen et al 2012, 17). Accordingly, some improvement to the solar capacity of Alice Springs has occurred outside the ASC program although it seems likely that the indirect impacts of the program have had a positive impact on increased PV penetration more generally. Other significant projects such as the installation of a co-generation facility at the Alice Springs Hospital occurred under the auspices of the previous NT Government's Climate Change Policy (Kieboom pers. comm).

Conclusion

Although there has been no dedicated program to progress the specific goals of the Roadmap in the area of energy, considerable progress has been made in improving energy efficiency and renewable energy capacity in Alice Springs since 2005. A combination of strong program design and implementation, good governance and broad community support for the project have meant the ASC project has been highly successful. As the program winds to a close it will be interesting to assess the impacts of all initiatives against current electricity demand in Alice Springs. A final assessment will clarify what the key successes of the project have been and suggest areas for ongoing improvement.

Water

Although none of the destinations outlined in the Roadmap in the area of water have been completely achieved, there has been considerable progress in this area since 2005. Substantial work has been done in the area of water efficiency and there is an evolving public discussion around a definition of 'appropriate use'.

40% of the fifteen actions listed in the 70 Actions have also been at least partly achieved, predominantly through AWS. Similar to the area of energy, an ongoing and community driven discussion around water efficiency has been powerful when linked with resourcing and government support. Although water use in 2012 shows a slight decrease since 2005 (Randall, pers. comm.), climatic factors are a key factor, making direct comparisons between years difficult. It will be interesting to see what the final figures from AWS reveal about usage patterns.

A considerable body of research was established around water efficiency prior to the AWS's establishment in 2011. Some important publications since the development of the Roadmap which have informed the development of AWS and impacted on Roadmap progress have been:

- The 2005 NRETAS commissioned McGregor Tan survey of community attitudes to water use;
- The publication (also by NRETAS) of the *Alice Springs Water Resource Strategy* in 2006;
- ISF's *Alice Springs Water Efficiency Study* (commenced in 2003 with the third and final report published in 2008) and;
- DKCRC's *Institutions for allocating water resources: the Alice Springs water resource strategy*

Each aspect of the above research has been vital to the design and implementation of the AWS program and associated Roadmap goals. For example, the Alice Springs Water Resource Strategy uses an annual figure of 10 731 ML for the extraction of public water (ASWRS 2006, preface), used as an efficiency yardstick by AWS and PWC in the implementation of the program (Locksley, pers. comm.). ISF's report into water efficiency in Alice Springs also highlights the significant economic imperative in improving water efficiency in the town and recommends a water efficiency program be implemented over five years (Turner et al 2007, 80-81).

Efficiency Outcomes

Prior to the establishment of AWS, COOLmob conducted 'garden tune ups' to help people improve water efficiency in their gardens. The design of this program fed into the AWS methodology (McClean, pers. comm.). COOLmob also conducted home water efficiency audits as far back as 2007, contributing to public readiness for the AWS program.

The Alice Springs Climate Action Group produced also a short film, *Water in Alice Springs*, which encouraged efficient and appropriate use of this important resource and raised the profile of water issues in the town. The film was the winner of a Melaleuca Award in 2009.

Alice Water Smart Homes and Businesses has aimed to improve water efficiency, assessing participants' water use on a case-by-case basis and providing targeted recommendations. Both residential and commercial audits typically identify savings of close to 45% (Michener,

2013). Leaks and poorly set-up irrigation have been the two areas needing greatest improvement identified by the program (Locksley, pers. comm.). Interestingly, leaks and irrigation changes are also areas with higher levels of implementation by residents following a Water Efficiency Consultation (ibid).

Almost 1000 homes and 50 businesses have worked with Alice Water Smart since the program started (Locksley, pers. comm.) with a focus on high water users in both these groups. As audience characteristics only emerge over time, the gradual sign up process has created challenges for AWS, limiting the opportunity to develop tailored solutions. However, Water Efficiency Consultations have generated a significant evidence base for further work in the area of water efficiency in Alice Springs. For example, NT Government facilities comprise a good proportion of higher non-residential users but the investment process for government can be very different to businesses that are also high water users (ibid).

Alice Water Smart Accommodation is a targeted package for accommodation providers in Alice Springs led by Tourism NT which identifies key areas where water savings can be made as well as giving access to a variety of rebates on efficiency products (Alice Water Smart, 2013).

Alice Water Smart Parks and Ovals has already saved roughly 63ML since mid 2011 (Allen, pers. comm.). The ASTC aims to save 80ML over two years through utilizing a Rainbird Maxicom Telemetric control irrigation system. The system enables watering schedules to be adjusted remotely (ibid). Council has also improved its oval renovation techniques, using coring, verti-draining, scarifying, dethatching, adjusting mowing heights, top dressing and fertilizing as strategies to reduce the need to extensive watering (ibid).

Alice Water Smart – Smart Metering is been another aspect of the program which will better gather information about water use patterns with the goal of improving efficiency (Alice Water Smart, 2013). Preliminary data suggests that smart meters do improve efficiency although it is difficult to track how much (Michener, pers. comm).

Alice Water Smart Rebates and Retrofits is a stand-alone sub project of Alice Water Smart which has been promoted through the Homes and Businesses projects. Generous vouchers for irrigation improvements are one example of water efficiency support available to the public as a part of the program. The two programs are interconnected and also work with the Central Australian Waterwise Rebates scheme which is managed by the Department of Land Resource Management.

Other projects have been:

- Improved leak management, including the use of SmartBall technology (Alice Water Smart, 2012);
- The development of the Alice Water Smart Guide and;
- The expansion of the Waterwise Schools program (anticipated savings 2011-2013 are 30ML) (Diment, pers. comm).

The Alice Water Smart Guide consolidates learning from Water Efficiency Consultations and community participation and was shaped by a Citizens' Advisory Panel. The guide and the soon to be upgraded AWS website will act as a comprehensive knowledge base for water efficiency in Alice Springs.

The Department of Land Resource Management also manages and administers a range of rebates for water efficient products including showers, toilets, washing machines and

rainwater tanks as well as for plumbers to undertake efficiency improvements (Department of Land Resource Management, 2013). The Department's Waterwise Rebates scheme predates Alice Water Smart but has benefitted from expanded funding made available through the Rebates and Retrofits project.

Although many programs have been rolled out by AWS over the past 20 months, the extent of water savings achieved will not be known for a while. Evaluation of actual savings will be based on time-series analysis of post Water Efficiency Consultation billing data – both for participants and the general population, adjusted for climatic and other variables. This complex analysis is in the very early stages the first batch of billing data just received. Better information about how water efficiency in Alice Springs can be improved will be one of the most important legacies of the AWS project.

Similarly, this Evaluation was not able to source data about actual water savings attributable to the NT Government Waterwise rebate scheme.

Infrastructure Outcomes

There have been some improvements to water infrastructure since the Roadmap was written.

In 2009 the Water Reuse in the Alice scheme started which enhanced sewerage treatment, reduced discharge and reclaimed wastewater. The scheme has eliminated dry weather effluent discharges from the treatment ponds by using a managed aquifer recharge system that uses reclaimed wastewater (Seddon, pers. comm.). The reclaimed water is treated using dissolved air flotation (DAF) and transported to the Arid Zone Research Institute where it is stored underground. The reclaimed water is available for horticultural purposes at the Institute.

AWS has also enabled further improvements to waste water treatment through the Alice Water Smart Reuse Project. The Water Reuse Project has enabled new flocculation, filtration and disinfection systems to be added to existing treatment facilities to improve water quality and comply with Environmental Health guidelines. A new recycled water tank has been constructed at the sewerage ponds and the existing recycled pipe network will be expanded by 3.5km. New recycled water pipes will run between Heavitree Gap and the Kilgariff subdivision, along the Stuart Highway and across the Palm Circuit bridge, delivering recycled water to users south of the Gap for irrigation (ibid). Estimated water savings for this project are 220ML per annum.

PWC is currently replacing and deepening bores at Roe Creek but there are no current plans to develop new bore fields. Although effective demand management is challenging (especially regarding peak water use) it remains preferable to establishing new infrastructure.

Conclusion

Although there has been progress in the area of water since 2005, the Roadmap goal of Alice Springs becoming a world leader in appropriate and efficient water use has yet to be achieved. Additionally, while the Roadmap was important in articulating a community vision of a water efficient Alice Springs, it was not the sole contributor to the establishment of AWS. National and Territory government priorities have also played a crucial role.

Further improvements to Alice Springs' water efficiency will require robust information about whole of town water use – our past performance and future scenarios. The publicly available Alice Springs Water Resource Strategy allocates approximately 10 GL a year for the town water. However this figure is not widely reported nor is the actual and projected demand compared to the allocation.

Greater public transparency around town water use trends over time (for example annually, peak and daily) and by sector together with clear information about the marginal cost of supply would greatly aid public consideration about the ability of current infrastructure to meet projected demand and the cost and benefits of a range of demand and supply options.

The many improvements in water efficiency which have been made at the levels of individual homes and businesses, the current profile of water issues and improvements to infrastructure undertaken since 2005 will be an important legacy as Alice Springs moves towards becoming a truly water wise desert town.

Built Environment

Three of the five Built Environment Destinations have been partly achieved since 2005. Ten of the twenty-five actions identified in the 70 Actions were also largely completed. A focus on making buildings more energy and water efficiency has meant many of these completed actions were undertaken by either ASC or AWS. There has been no data available specifically assessing energy and water savings associated with the built environment section of the Roadmap and accordingly no data about greenhouse gas emission savings available for this Evaluation.

Residential Outcomes

The ASC and AWS projects have provided considerable support to residents to inform them of worthwhile sustainability improvements to their homes. Their respective audit programs have been the primary mechanism for providing targeted recommendations and advice. ASC for example, would often advise households to make changes such as erecting shade structures or improving ventilation to improve the energy performance of the building itself (Rilatt, pers. comm).

The Sustainable Living House project demonstrated how retrofitting can improve the energy and water performance of an average Alice Springs home. Eighteen different energy and water saving devices were installed at the home on Kurrajong Drive and over 1300 members of the public visited the house to learn more about strategies to improve the performance of existing buildings (Alice Solar City, 2013).

Government and Business Outcomes

Audits of businesses to improve energy and water efficiency and suggest retrofit options to improve sustainability have also been a major success of ASC and AWS. AWS has also been involved in a number of audits of government buildings targeted at improving water efficiency, with possible efficiency improvements averaging 45% (Michener, pers. comm). Although it is difficult to monitor which recommendations are implemented, the audit process is an opportunity for business and building managers to learn more about water and energy efficiency in a real world setting. A final evaluation of AWS will hopefully indicate what percentage of recommendations are typically implemented.

Expertise around grid connect PV has been expanded through the installation of over 4MW of panels, two thirds of which has received funding support from ASC (Alice Solar City. 2013). AWS has also worked with real estate agents to help them better manage water waste on rental properties (Laidlaw, pers. comm).

Planning Outcomes

There have been some changes to planning requirements since the Roadmap was written, but none have been solely aimed at improving built environment sustainability.

Building Code of Australia 2009 energy efficiency provisions were adopted in 2010 in the NT (Department of Lands and Planning, 2010). As these changes are a part of a broader national move towards improving building performance it is doubtful the Roadmap was influential.

There has been a considerable amount of work done at the NT Government level around land use and planning for the township of Alice Springs as well as significant undertakings to revitalize the Central Activity District. Key documents informing more recent developments have been:

- The Alice Springs Central Activity District Built Form Guidelines (2009);
- The Alice Springs Central Activity Urban Design Audit (2009);
- The Alice Springs Planning for the Future Forum Land Use Study (2009)
- The Alice Springs Planning for the Future Forum Outcomes Report and Action Plan (2009) and;
- The Alice Springs Central Activity District Residential Capacity Study (2010).

Major outcomes of these documents and associated discussions and debates have been the decision to develop the suburb of Kilgariff (in preference to other potential sites for suburb scale development) and the significant works currently being undertaken to revitalize the Central Activity District of Alice Springs.

Progress in the planning sphere since 2005 is evidenced by strong community representation at the 4 day “design-by-enquiry” workshop organized by the previous NT government to develop the Kilgariff proposal (ABC News Online, 2011). ESD guidelines and sustainable housing were discussed at the forum (Marshall, G. 2013) but it remains to be seen whether these form a part of the design requirements for developments in this new subdivision. However, the workshop demonstrated a considerable shift in the willingness of the NT Government to engage with the community in the planning sphere (Meney, pers. comm).

The community was also given some opportunity to be involved in discussions around the redevelopment of the CAD of Alice Springs through a public forum facilitated by Elton Consulting and via a submission process (Elton Consulting et al 2009, 3). Ensuring that best practice, sustainable urban design principles are adhered to has been identified as important through this and other associated processes. In particular, the Outcomes Report and Action Plan produced by the NTG and Elton Consulting identify five key steps to move Alice Springs towards greater sustainability by improving energy efficiency, promoting sustainable design and retrofits and providing onsite recycling and sewerage processing facilities in new subdivisions (ibid, 7).

The establishment of a NT Planning Commission is another more recent development in the planning sphere which may have a positive influence on appropriate planning in the arid zone (Meney, pers. comm).

The adoption of a new leasing policy by the previous NT Government was also a positive step towards appropriate planning. Using the NABERS rating tool to assess building performance the new policy ensures NT Government leased properties perform to a minimum standard (Tam, pers. comm).

The Green Well Building being constructed near on Bath St is an example of how the NTG’s new leasing policy can drive sustainable development. Developers own the Green Well Building and the NTG has agreed to lease it for 20 years. This has given the developers a long-term incentive to comply with the environmental requirements stipulated by the NTG’s leasing policy while guaranteeing a financial return.

Some interesting features of the building include a 'sacrificial' foyer which is only heated and cooled using the second hand air from inside the office. The partially heated or cooled air then provides a buffer between outside temperatures and the office itself, reducing the overall amount of power required to heat and cool the building. Substantial innovation was also required to best utilize natural light for office lighting while complying with CBD planning requirements around fire. The building also uses rainwater for bathrooms and irrigation purposes (Dugdale, pers. comm).

The Desert Knowledge Precinct has also been constructed to environmental standards above and beyond those stipulated in the Construction Code. Selection of glass types, improved insulation, shading and orientation have been used to reduce the overall energy requirements of the building while enhancing the office environment. Some features originally considered in the project (such as an underground labyrinth designed to cool air and a fly roof) were not economic at the time of construction (Dugdale, pers. comm).

The Roadmap goals of embedding Green Star ratings for all new arid developments and establishing Ecologically Sustainable Development requirements for all new subdivisions have not been achieved.

Conclusion

The construction of the Green Well Building and the Desert Knowledge Precinct and enthusiastic community participation at the Kilgariff workshop demonstrate a growing community desire for improved built environment performance in the arid zone. While some sustainability activists have been disappointed at the choice of Kilgariff as a location for a major new subdivision, access to recycled water for irrigation and discussions around establishing public transport to the new suburb demonstrate a small shift towards making new developments more sustainable. Discussions around improving pedestrian and cyclist access, continuing to improve the penetration of solar power and preventing the sprawl of new car parks in the CAD redevelopment process are also small steps towards making the built environment of Alice Springs more sustainable.

The NT Government has made some improvements to the built environment sphere in terms of Roadmap goals since 2005. Given the scope for further improvements however, there is scope for an active working party to influence positive change in the built environment sector to further improve sustainability outcomes.

6) Conclusion

The 2005 Roadmap to a desertSMART Town was an important document for Alice Springs for a number of reasons. Firstly, it was the town's first community driven sustainability plan and provided a framework for sustainability related projects to progress. Secondly it took positive steps towards bringing together key players to take action on the critical sustainability challenges for the town. And finally, it created a space for a vision of a sustainable, resilient Alice Springs to be expressed in the public domain.

Key learnings can be summarized as follows:

- A clearly expressed community vision which can demonstrate widespread support increases the chances of initiatives receiving funding and other government support and can achieve environmental, social and economic outcomes;
- The lack of an ongoing, coordinated program targeting improved waste management and waste reduction in Alice Springs has been the primary factor in slow progress in this area since 2005;
- Strong progress in the area of energy can be attributed to strong community support combined with government investment;
- While excellent progress has been made in the area of water (evidenced through community support and government investment), better data about usage patterns would improve the implementation of water efficiency programs and;
- While progress has been made in the area of built environment, further work is needed to improve overall building performance in Alice Springs.

Overall, the Roadmap has been an important document in both articulating community views and progressing sustainability initiatives in Alice Springs. Regardless of whether or not the Roadmap influenced every program relating to energy, water, waste or built environment since 2005, its development has left an important legacy for all those working towards the goal of a sustainable and resilient Alice Springs.

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