A Framework for a Community Engagement Strategy for the Built Environment

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ARUP **naked**

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Preface

The Department of Innovation, Industry, Science and Research (DIISR) on the advice of the Built Environment Industry Innovation Council (BEIIC) funded this framework to develop a focused strategy to engage the broad community in the idea of more sustainable built environments. It addresses one of the key action areas identified in the BEIIC's Strategic Plan 2009 - 2014 for 2010, being the preparation of a Framework for a Community Engagement Strategy (framework).

Arup and Naked Communications, providing a unique mix of sustainable built environment expertise with cutting-edge consumer marketing, contemporary media and behavioural psychology skills and experience, formed a team in February 2010 to develop this framework.

Working with the BEIIC steering committee, comprising Sue Holliday (inaugral Chair of the BEIIC), Seona Meharg (CSIRO) and Siobhan Toohill (BEIIC member), the resulting framework attempts to tackle the following core challenges (as defined by the team) around sustainability and engagement of the broader Australian community:

»   Motivation for change and sustainability fatigue. A poll undertaken in July 2009 by the Lowy Institute showed the numbers of Australians willing to shoulder "significant costs" to tackle global warming had fallen to 48%, down from 60% in 2008 and 68% in 2006.

»   Fragmentation of traditional channels for communication.

»   Greater awareness of how people relate to information (people react to narratives, rather than data (Gardner, 2008)). This may also be at the core of the diminishing rate of engagement with the problem of sustainability outlined above.

»   Capactiy to change the built urban environment into a more sustainable one, by making everyone believe that change is already successfully happening.

Specific aims of the framework are to:

»   Identify sustainable built environments that are more desirable than the current one.

»   Determine how best to describe or convey these sustainable built environments in order to engage with the broader community.

»   Consider other ways to engage the broader community in the idea of more sustainable built environments.

»   Identify key innovations industry would need to deliver to support sustainable built environments.

Built environment industry experience has also been drawn upon to develop the framework, with specific focus on behaviour change and public engagement in sustainable development, by means of surveying peak industry bodies (i.e. Industry Association stakeholders).

Executive Summary

> We need a new approach to encouraging people to modify where they live and work to create sustainable built environments. One that popularises the message, and makes people think that 'everyone's already doing it'. We need to change the paradigm of sustainability from 'I should do it, I know it's the right thing to do but it's hard and expensive' to 'sustainability makes me and my community happier, everyone's doing it, and it's easy.'

Challenges

There are several core challenges around sustainability and engaging the broader Australian community.

The first, which our research will outline, is that Australian cities, and the behavioural patterns underpinning their condition, do need to change. As we will see, for all their immediately obvious attributes, and despite many considering urban environments to have the potential to be the most sustainable form of living, Australian cities have deep structural problems. The recent Commonwealth report State of Australian Cities 2010 describes the national urban condition as far from resilient.

Given that the bulk of the Australian population lives in cities, this is problematic, as an increasing array of data portrays Australian cities as increasingly unsustainable places, predicated on a greater rate of unsustainable behaviour, despite at least a decade's worth of attempts to position 'sustainability' in the public eye.

Yet directing motivation for change in terms of a more sustainable built environment is clearly complex. A poll in July 2009 by the Lowy Institute showed the numbers of Australians willing to shoulder "significant costs" to tackle global warming had fallen to 48%, down from 60% in 2008 and 68% in 2006.

Part of this drop may not simply be due to lack of understanding, but also a form of 'sustainability fatigue' due to an over-communication of abstract messages that show little understanding of how communities might build their own knowledge and activity.

The second challenge is that many of the traditional channels for communication have fragmented to the point that it is barely possible to talk about a 'mainstream' channel for broad community engagement. Certainly relying on newspapers or broadcast alone would not reflect a contemporary approach to engagement.

A third challenge concerns the kind of story being told, in a culture where people react to narratives rather than data (Gardner 2008). This may also be at the core of the diminishing rate of engagement with the problem of sustainability outlined above. Finally, there is the challenge of changing the built urban environment into a more sustainable place, by making everyone believe that change is already successfully happening.

Approach

Our framework attempts to tackle these problems directly, by outlining how to generate mass engagement around the idea of a sustainable built environment. This entails working with narratives rather than data, to some degree, but also deploying an understanding of how to enable behavioural change and how it occurs.

Our approach mixes the strongest elements of cognitive and behavioral psychology, behavioural economics and marketing communications. Our framework embraces four core principles:

1. Make people believe others are already acting in sustainable ways.

2. Make it easy via demonstration, and chunking the desired behaviours down.

3. Make it relevant by using the right role models (housing typologies).

4. Use social media (highly effective) and broadcast media (high reach).

Why this approach will be effective

The core purpose of the framework is to develop a focused and practical strategy to engage the broad community in the idea of a more sustainable built environments. The framework's platform is predicated on the mass engagement possible through contemporary media, through which the community can engage in 'active learning' and from which 'social proof' can be generated.

So rather than consult the community, via focus groups say, as to whether they may or may not be interested in sustainable built environments, this framework describes a public platform in which the community itself might 'prototype' sustainable built environments, while network effects help disseminate the discussions and learning and reinforce activity. In this way, the community itself identifies sustainable built environments that are more desirable than the current one, and the community itself is the carrier of the message.

The mainstream appeal of broadcast will lend sustainability the highly motivating sense 'that everyone is now doing it', and thus help drive change. The framework will outline in detail how a multi-layered social media experience, with broadcast TV at the forefront, could engage the broader community. This might enable the 'cut-through' programs like Masterchef Australia, Idol or The Apprentice have achieved, yet subtly predicated on the ideas underpinning sustainable built environments.

Given that the vast majority of Australia's built environment for the next few decades is already around us, the framework is also largely predicated on 'retrofitting' the existing environment (i.e. how can people make a difference in their existing homes, offices and neighbourhoods?).

Defining the Problem

Attitudinal barriers

Sustainability has been in the public vernacular for several years now. Despite widespread research into the perils of living unsustainably, as well as the subject attracting much debate, the concept of sustainability remains a difficult one for the public to genuinely engage with. Sustainable living attracts a degree of interest generally, but this does not, however, necessarily translate into their behaviour.

The need for engaging the community in sustainable behaviour cannot be understated, since attitudes without action are insufficient to bring about positive change. Currently, attitude surveys show that many Australians are open to the idea of sustainable living, so long as engaging in these behaviours does not compromise their quality of life. Other attitudinal barriers abound in relation to public perceptions of sustainability. These are numerous, but include:

» Beliefs related to the difficulty of implementing and engaging in sustainable behaviour.

» It is not a popular or widespread enough practice.

» The idea or message itself is somewhat uninteresting and arduous.

» And, that the message itself should be viewed with scepticism on the basis that the issue may not really exist.

Behaviour change theory has evolved to encompass a number of existing and newer understandings about what makes people change their behaviour and how durable that change in behaviour is.   In summary, behaviour change theory has progressed from focussing in the main on altering attitudes in the belief that this will also alter behaviour, to recognising that altering behaviour itself can have a transformational effect on a person's attitudes and their behaviour over time. The power of peers in this process, and the capacity for an individual to affect change are also crucial. These theories are outlined in the Understanding Behaviour Change section of this report.

Demonstrating that quality of life will improve, rather than be negatively affected, by sustainability is therefore necessary in order to overcome this problem. If this is

a key hurdle to changing behaviour, then this perception must be addressed and rectified before any kind of true or meaningful engagement can occur. Similarly, the full range of other perceptions must also be addressed in our approach.

Market barriers

Another hurdle to people living sustainably is the lack of appropriate infrastructure in place to allow for changes in behaviour to occur. This relates to the market and Australia's built form.

As the BEIIC steering group itself identified, private enterprise supplies the majority of development and construction in Australian cities, and the property development and building / construction industry in Australia is relatively conservative— in short, what gets built is directed by the industry's perception of what 'the market' will buy.

Therefore, we might look at four key ways of driving a more sustainable built environment:

» Technical innovations introduced into the market to make processes more efficient.

» A major roll-out of public building programs designed to lead the market by example (such as social housing).

» Given the price associated with change, altering market conditions to allow a more sustainable built environment to be development and constructed.

» And, driving behavioural change amongst consumers to 'pull' the market in a more sustainable direction.
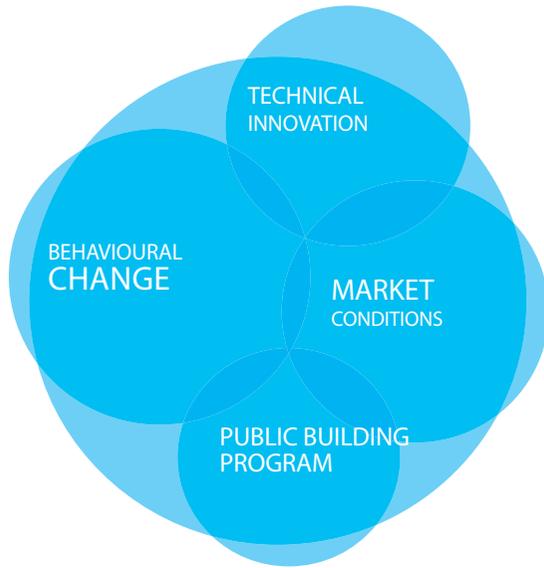
Governments in the past have used mass building programs to run programs out which have provided opportunities to demonstrate leadership. However, in the likely absence of further mass public building programs, this can be discounted as a core strategy. Technical innovations will continue to be produced and promoted and these should be supported with various forms of investment, but their track record indicates that they have not substantively made a difference in themselves.

Given this, the framework for engagement is centred on altering the market conditions through attempting to stimulate behavioural change on a widespread scale.
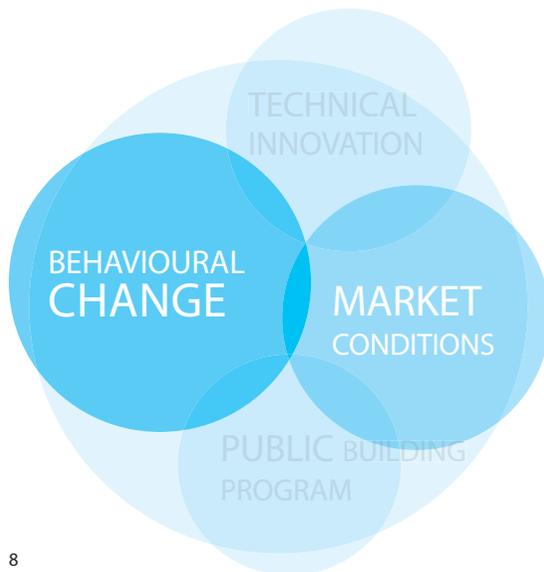
Re-designing the market

The basic premise is this: If the market is the primary driver of 'the offer' in terms of the built environment, and if the market itself cannot create the necessary 'pull' to encourage the industry to implement a more sustainable built environment, then the market must be re-designed in order to create that pull.

This entails changing the attitudes of consumers en masse such that,

in effect, the aggregate attitude of the market shifts accordingly, bringing the development and construction industry with it.

While government, and many industries, might well be nervous about the idea of behavioural change, or shifting people's attitudes, it is the daily business of at least two industries: contemporary media and marketing.
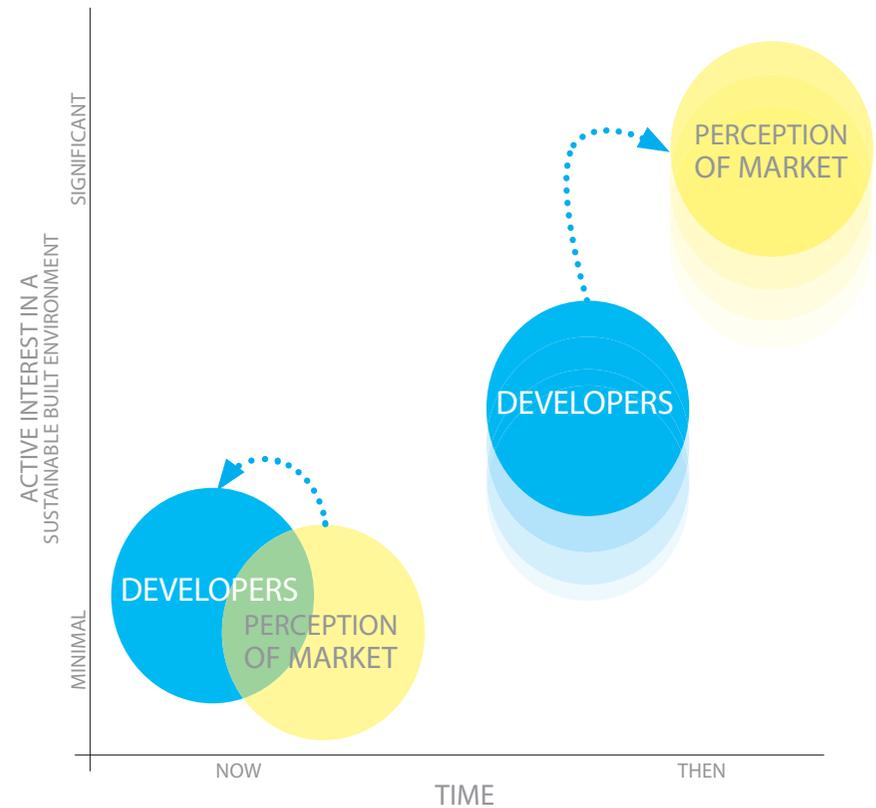
Understanding Australian Built Environments

To identify sustainable built environments that are more desirable than the current one, the interrelationships between the built environment, the economy, population and the environment in the Australian context are seen as an important starting point. The research exists within the foundation that addressing sustainability within the built environment will in turn have positive effects on the economy, environment and our lifestyles.

As Australia looks towards 2050 with an estimated population of 34 million (Population Reference Bureau, 2009), our ability to live sustainably will be challenged. Choices at a household and wider environment level will need to be recognised as holding significant opportunities to affect change towards a lifestyle that reduces our impact on the planet, maintains productivity in our economy and supports a high quality of life.

Australia has been experiencing a trend towards larger homes despite lower occupancy rates. The average new Australian home is now the biggest in the world. The average floor space of a new home in Australia in 2009 was 215m² (James, 2009), increasing significantly since 1985, when the average floor size of a new home was 160m². Concurrently, the average number of persons per household has declined from 2.69 in 1994 to 2.56 in 2007 and is expected to further drop to 2.3 persons per household in 2025 (DEHWA, 2008).

Reflecting the growing trend toward increased floor space per person is increased energy use per capita. Despite the implementation of energy efficient programs, DEHWA (2008) predicts per capita energy consumption to increase from 17 GJ/person in 2008, to 20 GJ/person in 2020. Higher energy consumption is attributed to increases in consumption of household appliances, IT equipment and space heating and cooling devices (air conditioners and fans etc.)

As Australia's consumption patterns have increased, the amount of waste generated per person has also continued to rise. National recycling rates have improved significantly from 6% of total waste diverted from landfill in 1992 to 52% of total waste diverted to landfill in 2006. However, overall waste generation has increased. Increased waste generation is associated with economic growth, increased ownership of goods per person, higher replacement of goods due to fashion and technology and reduced product durability. It is estimated that Australians spend at least $10.5 billion each year on products they don't use, of which $5.3 billion is attributed to wasted food (ACF, 2007).

Actions within the home present effects beyond the direct household realm. In 2004, Australians used 2108 gigalitres of water directly in the home. Indirectly, it is estimated that it takes more than six times direct residential water use to produce food and goods consumed by the household (ACF, 2007). In addition to high water consumption, the food system presents high environmental impacts and risks related to land use, energy for processing, storage and distribution as well as waste, packaging and transport. When emissions from energy, transport and waste are included, it has been estimated that at least 23% of Australia's greenhouse gas emissions come from the food system (VIEL, 2008).

Emissions associated with transport are expected to rise by 22% between 2007 and 2020 with a significant proportion related to road transport (MCU, 2009). The transport system in Australia is predicted to become more inefficient in terms of cost, time, emissions and passenger movement (ASBEC, 2010). Cities are forecast to be more congested, presenting restrictions to freight movement and increases in passenger travel times. Congestion is identified as having a direct relationship to the productivity of Australian cities. The Major Cities Unit (2009) predicts the average cost of congestion to Australian capital cities is estimated to rise from $9.4 billion in 2005 to $20.4 billion by 2020.

Contributing to road transport emissions is Australia's high rate of car ownership and high dependence on private vehicles for all types of trips, even over short distances. Australia has the second highest rate of car ownership in the world (Austroads, 2005) and more than half of all car trips made in Sydney are less than 5 km (TDC, 2009).

Reliance on private vehicles has been strongly linked to health. A survey suggests that people driving were less likely to undertake recommended levels of physical activity than non – car users and driving to work was associated with being overweight and obese (Wen et al. 2006). Australia is recognised as one of the most overweight developed nations, with over 60% of adults and one in four children overweight or obese (National Preventative Health Taskforce by the Obesity Working Group (2009). Including both direct and indirect factors, it is estimated

that obesity costs the Australian Government almost $8.3 billion in 2008 (Access Economics, 2008).

The design of urban environments is recognised as fundamental to improving the health of Australians. Walkable community design, as well as providing transport opportunities beyond private vehicle use will support active living and lower reliance on private vehicles.

The research points towards a bleak outlook for the future of Australian built environments. However, in moving towards a sustainable built environment we can look towards local and international examples that are more desirable than the current one. A number of case studies are presented (Appendix A) which illustrate certain sustainable development outcomes. Only one example which combines sustainable design and behaviour change as a key strategy from the outset has been identified (C_life, Helsinki). Based on these case studies, it is evident that the majority of sustainability innovations are occuring as part of whole new developments or redevelopments as opposed to retrofitting existing urban forms. With approximately 80% of Australia's population living in suburban areas (which are largely not subject to a high rate of transformation or consolidation), it is clear that part of the challenge is finding sustainable built environments, of a similar typology to Australian's way of living and working. That is, examples which can act as a showcase of good practice and inspiration to the Australian public.

Australian housing typologies

In the absence of a major public building program and the fact that the majority of the Australian built environment will exist in the next 50 years, the framework research on the built environment also includes an analysis of existing Australian housing typologies (Appendix B). Census data is used to provide an outline of floorspace, occupancy levels and typical travel to work modes and distances for the following typologies:

- » Cul-de-sac.
- » McMansion.
- » Inner city terrace.
- » Inner city apartment.
- » Rural residential house.
- » Suburban village house.

This analysis reveals considerable differences between the fundamental conditions experienced by households depending upon their housing type, distance from employment and their neighbourhood character.

This information can provide a basis for the Australian public to better understand the implication of housing preferences and how these drive sustainability behaviour (e.g. through petrol pricing in relation to travel to work distances). It also provides a source of research to identify a model of a sustainable built environment in the Australian context that is more desirable than the current one.

Conclusion

Recognising the significant impact of our lifestyles at a household and wider environment level presents opportunities for behavioural change towards a sustainable lifestyle.

This research highlights the concept that well designed built form as well as access to services within the built environment is necessary to support choices at the household and wider environment level to drive change towards creating a sustainable built environment. This research also identifies gaps in existing data related to most sustainable built environments (in terms of people, communities and behaviour, systems and infrastructure, resources, structures, data, and governance) in the Australian context. This research in isolation will not be sufficient to influence behavioural change and public engagement in sustainable development. As stated by Innes (1998), being technically correct, i.e. making pronoucements about the built environment, is never enough to influence direct action.

The range of housing typologies provides a range of role models that people can relate to. The framework recognises that in order to change behaviour people others in similar circumstance, with behaviours they can model. Any behavioral change program needs representation from each of these key typologies.

Understanding Behaviour Change

Psychology, the scientific study of human thoughts, emotions and behaviour, has empirically examined behavioural change for decades. Over time, psychologists have been concerned with understanding attitudes and behaviours, and the relationship that exists between them. Although attitudes are not always predictive of behaviour, and vice versa, attempts to change both have dominated the literature.

Learning is vital if people are to change their behaviour. In considering the issue of sustainable behaviour, ideally, we would like to achieve behavioural and attitudinal shifts. There are several main perspectives on behaviour change and learning in the literature and how best to facilitate these changes.

The first of these is attitude change. This can be done with the goal of ultimately changing behaviour, or as a task in and of itself. The second of these is the behavioural route to behaviour change. This can be done in order to generate a one-off behaviour, or to attempt to gain repeated incidences of the behaviour through maintenance. Constructivist and humanistic approaches are also ways of approaching behaviour change, whereby individuals are construed as sense-makers engaged in a continual process of evaluating their environments.

Since our ultimate goal for the project is to generate both attitudinal and behavioural shifts, it is important to consider how we might pursue these goals in light of existing theories:

- » The Cognitive Approach – focuses on altering attitudes through learning.

- » The Behaviourist Approach – focus on altering behaviour through action.

- » The Constructivist Approach – focuses on the relationship of an individual within and to a group.

- » The Humanist Approach – focuses on empowering people with responsibility.

Changing attitudes to change behaviour: the cognitive approach

Attempts to change attitudes are often rooted in the assumption that strongly held attitudes are predictive of, and correlate with, behaviour. Attitude change is generally attempted by the use of either rational or emotional appeals. Emotional appeals usually aim to generate one specific emotion in the consumer, such as fear or guilt. Positive emotions, such as humour, can also be used. Rational messages can contain information about product or service benefits - it aims to persuade or change someone's mind. Essentially, they work on the central premise that once people understand why they should change their behaviour, they will.

This model has formed the basis of traditional advertising campaigns for years. While sometimes effective, this method is often not predictive of real and long-lasting behavioural change (Sheppard, Hartwick, & Warshaw, 1988; Gray, 1985). This can be seen in traditional attempts to change behaviour with purely emotional or informative approaches, such as anti-smoking campaigns and 'green' messages.

Persuasion attempts can be viewed as essentially passive, in that often a call to action is implied and not made explicit. Similarly, a passive recipient of a message, however strong the message may be, is often unable to affect changes in their own circumstances due to having insufficient incentives, behavioural or situational control, or a lack of confidence in their own abilities (self-efficacy) (Azjen & Fishbein, 1980; Gray, 1985).

Depending on the particular type of behaviour required of the persuasion attempt, varying effects can be derived from this approach. Darnton (2008) cites research into pro-environmental behaviours, which found that at least 80 per cent of the factors influencing behaviour did not stem from knowledge or awareness. Findings such as these indicate that attempts to provide information often miss the mark or go unnoticed by intended recipients. Also, persuasion through information or emotion generally has a less significant relationship with behaviour over time (Fazio and Zanna, 1981; Gray, 1985).

From this, we can conclude that while attitude-based approaches to behaviour change may result in changed attitudes or even changed behaviour in the short-term, they can be insufficient to engage individuals in maintaining that behaviour.

It is also important to consider that although attitudes can precede behaviour, the opposite can also occur.

Prompting behaviour to change behaviour: the behaviourist approach

Behaviourists believe that prompting an individual to engage in a behaviour will, by key processes of operant conditioning (specifically, reinforcement), enable an individual to learn about his or her environment and develop behavioural patterns which are maintained over time (Skinner, 1972). The ultimate goal is for behaviour to become automatic or habitual in nature. Direct attempts to change behaviour are often done without concern about or reference to attitudes, either because it is unnecessary to generate attitude change (the behaviour alone being sufficient) or because it is assumed that attitudes will change as a natural corollary of behaviour change – as in the case of habit formation. Examples of behaviour-based strategies used in advertising are free trials and sampling, and incentivised actions.

Cognitive dissonance is theorised also to play a key role in behavioural learning. This theory states that in order to reduce discomfort, individuals strive for internal consistency – which means adhering to one set of beliefs. If these beliefs come into conflict with one another, they are forced to re-evaluate, and either reject the new information, or incorporate it into their existing attitudes and knowledge. In the case of habitual behaviour, it is thought that individuals adjust their attitudes to align with their behaviour as a form of justification.

In contrast with the attitudinally-focused approach, self-efficacy (Bandura, 1977) is a key mechanism by which the behavioural method often works. By participating in the behaviour itself, or a version of it, individuals are able to gain experience and confidence in their abilities to perform the behaviour in future. Self-efficacy is thought to be the key mechanism through which behaviour change leads to attitude change, because it refers to an individual's belief that he or she is capable of doing something and is predictive of the individual's propensity to engage in the behaviour in the future (Bandura, 1977).

Direct experience correlates strongly with both short-term and long-term behavioural change maintenance (Fazio & Zanna, 1981, Kraus, 1995). Behavioural strategies, or involving through direct experience, work best when prior experience is limited and when the behaviour is positively reinforced (Skinner, 1972, 1983). The possibility of negative reinforcement, rather than positive, from behavioural experience poses a real risk for behavioural change. If behaviour is 'tried out' and produces a negative experience, this is problematic for future attempts to engage in that behaviour. Hence, attempts to induce trial of a behaviour must be carefully designed and managed.

However, when a set of desired behaviours are complex or differ over time, behavioural maintenance can be less durable (de Young, 1993). Similarly, when behavioural or situational convenience is low, maintenance of a desired behaviour can decrease. A final caveat to behavioural learning relates to the power of the context within which the behaviour needs to occur. Even when the immediate or physical environment is positively reinforcing, the social environment is extremely powerful, meaning that these factors must also be incorporated and considered as part of the overall change strategy.

Empowering individuals in consideration of context: the constructivist and humanism approach

Constructivism incorporates the notions of both context and process into the issue of behaviour change. The central viewpoint is that people are active sense-makers who are engaged in a constant process of assessing their environment, and act in accordance with these interpretations (Kelly, 1955, Allen et al., 2001). Thus, this view of individuals focuses on the internal process of interpretation versus the process of knowledge transmission – in particular, the notion of the same situation being interpreted differently by different individuals. In contrast with the traditional methods of attitudinal persuasion, this approach relies on the tailoring of messages, making sure they are appropriate for the target audience both in terms of content and delivery, and allowing scope for changes that occur during the learning process. Social as well as physical environments are considered as key contexts influencing the acceptance of a message. An example of the constructivist approach is ambient media, whereby messages are placed in relevant contexts to the consumer, such as signage in relevant places, or targeted marketing.

This theory builds upon the cognitive approach, so similar limitations exist. In order for engagement to occur, both the information source, as well as the information itself, must be credible and relevant (Reynolds & Busby, 1996). The premise of behaviour resulting from sense-making, ideas about what should happen, and what might happen if behaviour is changed, also relies on these perceptions to

be accurate (Ross & Nisbett, 2001). In other words, interaction with the message as well as reflection upon the message is necessary for behaviour change to occur and to be maintained over time.

The humanist approach emphasises the necessity of empowering learners, giving them control over the learning process, and encouraging them to participate in the learning process (Kolb, 1984; Atherton, 2001). This approach is similar to the behaviourist approach, but has a greater emphasis on the interactive nature of the behaviour being engaged in. In this sense, individuals engaging in initial behaviours are able to choose the behaviours and their level of involvement. The learning that results from this approach is intended to be 'double-loop' in nature, whereby original assumptions and perspectives are questioned, as well as the original behaviour itself. An example of a humanist approach to behaviour change is a community-based participation program, whereby individuals assign themselves roles and responsibilities. Criticism of this method includes that the behaviours chosen to engage in may not actually be sufficient to engage the individual. Also, such programs can be somewhat difficult to implement and manage, especially with large groups.

Used frequently in education and change management, these perspectives highlight the notion that change is multi-faceted and is not a linear process. We constantly construct our reality based on our own experiences as well as those of others. Learning occurs in many stages and as a result of being exposed to many different influences.

In summary, there are a variety of different tactics available in order to propel attitudinal and behavioural change. These theories are complementary, when used in conjunction with one another. An ideal strategy considers the strengths and weaknesses of each approach, and allows for the incorporation of differing elements to provide the appropriate spurs for motivation.

In order to bring about large-scale change, reliance on one approach is not recommended, due to the limited effects likely to be derived. Instead, a toolkit of theoretical approaches is needed.

A combination of the approaches

Taking a combined perspective is a newer approach to behaviour change. When the approaches are combined, the potential exists for more significant behavioural changes. Getting people involved in performing a behaviour, and then also providing them with information as to its positive qualities, is likely to lead to both attitude change and further behavioural maintenance (Geller, 1989). In addition, higher-quality technology, as well as a greater array of communication methods available, means that behaviourally-based techniques are more easily achievable (McKenzie-Mohr, 2000).

This approach is based on the idea that community involvement and action may be easier to achieve as individuals will know they are not acting alone (Sustainable Consumption Roundtable, 2006).

The separate components of the framework approach can be used individually, but when combined they stand to produce powerful effects.

We have developed the framework to incorporate a number of critical principles known as 'behavioural spurs' (see Strategic Approach to Community Engagement) to support wide-spread behaviour change amongst the Australian public. The Framework can be applied in a number of ways using individual media in a variety of combinations to achieve specific outcomes and at different scales.

A specific example of how the framework could be applied has been developed in further detail in Appendix C (Program Architecture) to demonstrate the potential for it to influence behaviour at near maximum reach within Australia.
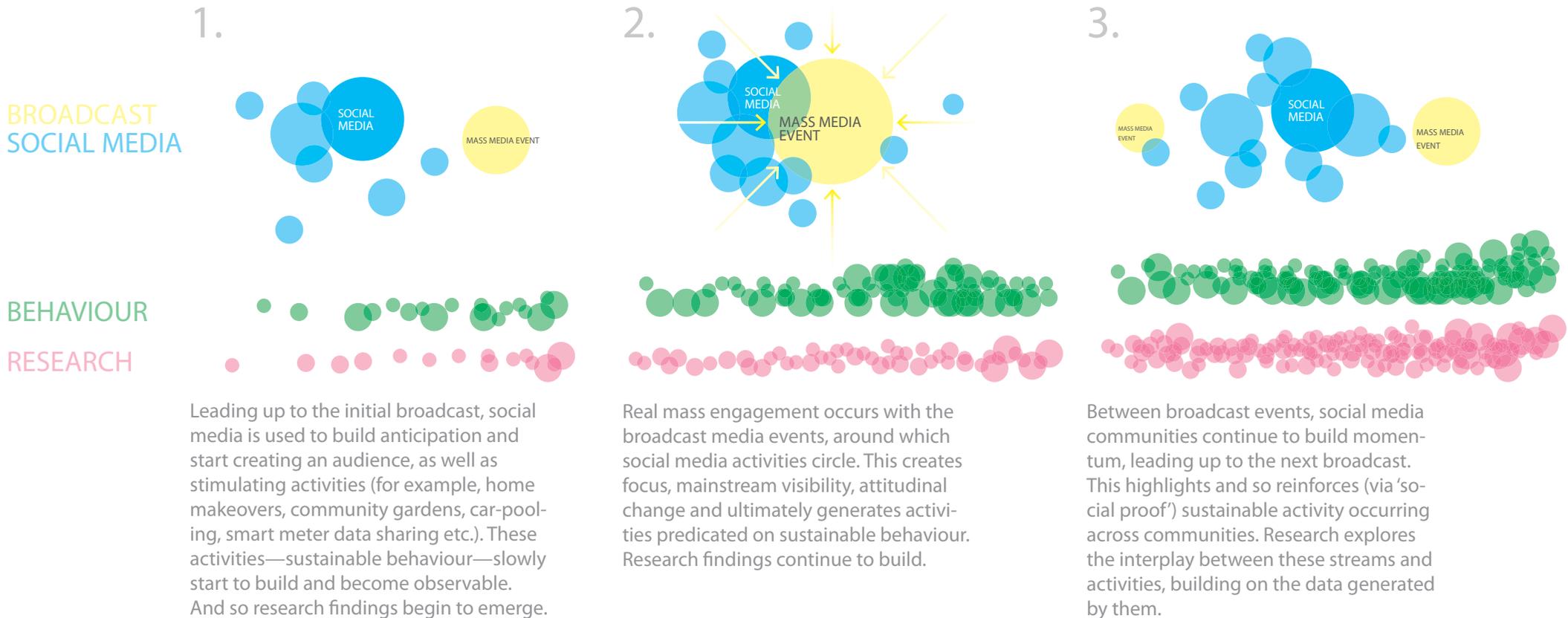
Engagement Framework

This framework can be used at any scale, from working with a community on a local project such as a community garden, through to mass engagement with the Australian public.

Whatever the campaign, a good engagement program should respond to the following five core principles:

1. Why: incentivised actions.

2. What: informational messages.

3. Who: social norming.

4. How: experiential learning; behavioural convenience; behavioural modelling.

5. When and where: mass engagement.

The relationship between social media, behaviour and research is shown below.

Leading up to the initial broadcast, social media is used to build anticipation and start creating an audience, as well as stimulating activities (for example, home makeovers, community gardens, car-pooling, smart meter data sharing etc.). These activities—sustainable behaviour—slowly start to build and become observable. And so research findings begin to emerge.

Real mass engagement occurs with the broadcast media events, around which social media activities circle. This creates focus, mainstream visibility, attitudinal change and ultimately generates activities predicated on sustainable behaviour. Research findings continue to build.

Between broadcast events, social media communities continue to build momentum, leading up to the next broadcast. This highlights and so reinforces (via 'social proof') sustainable activity occurring across communities. Research explores the interplay between these streams and activities, building on the data generated by them.

The proposed structure of the strategy would essentially be the execution of a social experiment, played out on a public platform, so as to involve the Australian public as much as possible.

How will we know we have engaged the community / Australian public in sustainable beliefs? Pre- and post-measures of their receptiveness to, and own participation in, sustainable behaviours would be taken. A test battery of these measures is outlined in Appendix D. This would take the form of an identical questionnaire administered to a large-scale, representative sample of the Australian public, conducted both online and via mail.

The questionnaire would measure facets of engagement such as:

»   The frequency of sustainable behaviours they engage in currently.

»   The level of openness they have towards sustainable behaviour.

»   The specific intentions to engage in sustainable behaviour they hold.

»   The types of information about sustainable behaviour they have sought.

»   Their perceptions of sustainable behaviour.

»   Their experiences of sustainable behaviour.

"Research has shown that education directed toward behaviour change ... should include interactive demonstrations and discussion .... Change agents should observe this well-known educational principle: Tell them and they'll forget; Demonstrate and they'll remember; Involve them and they'll understand" (Geller, 1989).

Strategic Approach to Community Engagement

The framework incorporates some of the following key psychological 'spurs' for behaviour change:

» Mass engagement and exposure.

» Experiential learning.

» Incentivised actions.

» Social norming.

» Behavioural convenience.

» Informational messages.

» Behavioural modelling and prompting.

Mass engagement and exposure

In order to generate mass engagement, a mass medium is required. This is necessary for learning to occur at a macro level and to reach as many members of the Australian public as possible. Maximising exposure means that the message and strategy has a strong likelihood of consumer contact.

This could utilise any form of mass media, such as radio, widely available literature or publications, or television. The reach of particular mediums into a mass audience depends on audience numbers, diversity of that audience and the capacity for that medium to create spillover effects into other media. Television is often considered the most effective form of mass communication because it is both visual and audio and has a strong penetration into the Australian market.

Experiential learning

Taking the constructivist approach, a focus on experiential and participative learning is also key. Any ways that we can encourage and assist the Australian public to interact with the sustainability message – including what works, as well as what doesn't – will be highly beneficial to our ultimate goal of engagement.

Some of these ways include involvement in community programs, using social

and digital media to communicate with others about the message and learning process, and being involved in decision-making. Involving various groups from the community in collective decision-making in policy development is another example of participative learning.

Being able to track the progress of a group of individuals is especially powerful both directly for those involved in the experiential learning, but also for those who are indirectly exposed to their progress. Therefore an important component of this framework is to enable 'experiments' to occur in which the communities involved can monitor their progress, and a wider audience can learn from their experience. Enabling interaction between these two groups via interactive media will compound the spillover effect and help to engage those who have been 'bystanders' into action.

Incentivised actions

Rewards are key in both initiating and reinforcing behaviour, and incentivised actions are a prime example of this. Offering rewards for sustainable behaviour can obviously be implemented via policies and other types of incentive schemes.

Rewards can be as simple as the right to participate in the publicised activity itself, or more traditionally, with a prize proffered for the best result from an activity undertaken over time.

Social norming

The power of social influence and norms are again key in both initiating and maintaining behavioural change, as highlighted in the constructivist approach. Changing social and cultural norms is a necessity when we attempt to bring about broad-based, long-lasting change. Azjen and Fishbein (2010) consider norms to be critical in behaviour, since they have powerful effects on individuals. Generally, norms develop over time, and there are no 'quick fix' ways to change them. They develop from cultural influences, such as mass media as well as societal and governmental policies and initiatives. Depictions of 'reality' can be powerful in shaping perceptions of current norms. Reality TV has been a powerful modern phenomenon that has changed the face of how we interact with the medium. There is now

a heightened expectation that television will provide a depiction of real, versus fictional, versions of events – no matter how edited these versions of reality are. Reality TV shows have the potential to reach extremely wide audiences and in combination with social media, can provide the basis for so-called viral messaging, whereby individuals propel the information at the same time as offer commentary amongst their own peer groups.

There are two types of social influence. One of these is 'normative' social influence (Deutsch & Gerard, 1955), whereby we see what others are doing and infer that this behaviour is the norm and that we must engage in it also, in order to fit in or comply. The second type of social influence is informational social influence (Deutsch & Gerard, 1955), whereby individuals observe other's behaviour and infer their own attitudes from this. For example, an unattractive man surrounded by beautiful women, when observed by others, is usually presumed to have some kind of positive or valuable characteristics.

Social influence is an important principle that underpins many forms of media, but particularly those which enable a visual format as well as aural and text-based.

Behavioural convenience

As demonstrated in the model above, making a behaviour as easy as possible to perform greatly increases motivation to perform that behaviour. Individuals can be greatly motivated to perform a behaviour, but give up if the task seems too arduous. Increasing both the actual, as well as the perceived, efficacy of a behaviour, therefore, is also crucial in planning a community engagement strategy.

Increasing behavioural convenience can be achieved in a variety of different ways, such as making options more widely available and/or cost-efficient to consumers, and increasing ways for them to incorporate these options more easily into their daily routines. This might mean an enhanced offering of sustainability-products- and services, or increased information about how individuals are able to behave sustainably in simple ways.

A method of achieving convenient ways of being sustainable could be partnering with industry to determine best-practice sustainability interventions. The commu-

nication of these various types of sustainability 'enhancers' could occur via traditional advertising and marketing methods, to ensure individuals are aware of the options available to them.

Any strategy developed to implement this framework could serve as a platform for the communication and demonstration of the message of behavioural convenience, with the opportunity for cross-promotions for various sustainability interventions.

Informational messages

In attempts to persuade, information is key in redefining attitudes. Dissemination and distribution of credible and reliable information about sustainable practices is necessary for attitude change, but used alone, is likely to be insufficient.

Research findings which are published in journals and newspapers, and traditional information-based advertising campaigns are options for achieving this particular goal. However, in and of themselves, these are insufficient to engender long-lasting behaviour change at a macro level, as discussed above in relation to the cognitive approach. In addition, preferred means of seeking sustainability advice includes other popular methods such as websites and TV (Steedman, 2005).

Implementation strategies must therefore carefully disseminate information alongside of the other activities included in the framework. Information about quality of life scores and sustainable practices should be dispersed via the chosen primary medium itself, the website and empirical research detailing the findings of the social experiment or the experiential learning component of the implementation strategy.

Behavioural modelling and prompting

As discussed, prompting and modelling desired behaviour is crucial for impelling individuals to gain direct experience with sustainable behaviour. Community programs are a perfect example of this approach, in that once people get involved, and also see the desired behaviours being modelled by their peers, they are likely to have increased propensity to engage in the behaviour in future, and adopt new beliefs.

One drawback of existing community programs is that their reach is generally limited to those who actually participate in the programs themselves. While the focus of this framework is to include specific communities, it is in the mass broadcast of this community project that impels behavioural modelling. Receivers of this information are able to see the behaviours in action, as well as their consequences and rewards. This dissemination of behaviour is crucial in gaining a wider reach (as well as helping to guide the formation of norms).

In addition, participation by those at home via a website and 'parallel competition', such as by uploading their own content and competing for viewer prizes, is likely to lead to future behaviour which is congruent with this.

Goal setting, another key method of behavioural prompting, would also be utilised in the proposed framework. This would translate to participants in the experiment setting their own goals for sustainable behaviour, as well as inviting home viewers to do the same, perhaps on a smaller scale, via the website, with rewards for achieving these offered such as prizes.

 The framework is therefore built upon the need for a combined approach. Appendix E containing a matrix of mediums (one-way communication, person-to-person / social media communication, two-way communication and experiential), demonstrates the strengths and limitations of using different mediums (and their relevant behaviour change theory) in engaging the public in sustainability. It reinforces the need for a combined approach to increase the likelihood of the Australian public engaging in sustainable behaviour.

Observations

1. Tackling the issue of community engagement with sustainability requires a multi-faceted and multi-dimensional approach rooted in well-established behavioural principles.

2. Drawing upon social literature research, a range of mediums are needed to extend behaviour change in Australian communities. To increase a program's success, it should be reliant upon mass engagement and exposure, experiential learning, incentivised actions, social norms, behavioural convenience, informational messages and behavioural modelling and prompting.

3. Any form of behavioural change program needs to embrace the following 5 key principles: why - incentivised actions; what - informational messages; who: - social norming; how - experiential learning; behavioural convenience; behavioural modelling; and when and where - mass engagement.

4. We know that policy initiatives which aim to achieve their objectives discretely (for example, residential building energy efficiency policy), can backfire without the community understanding their full intent. (In this case energy use in dwellings has continued to rise due to untrammeled increase in appliance combined with larger dwelling sizes). An overarching action for government is to take the bold step of recognising that it must engage with communities over how our cities can become more sustainable in the future. This requires deep and broad based engagement about our preconceptions of our own futures - challenging the long-held cultural standard of the great Australian dream. While we have proposed a number of specific engagement pathways for altering behaviour - this is best supported by widescale investment in the education sector to develop curricula that engender a more realistic view of our future amongst current generations.

5. There is a need for leadership within the context of a policy and research architecture that promotes excellence and mainstreaming of sustainability in the built environment. The UK and Europe are both well-served by bodies such as CABE and a network of independent experts providing critical friend advice and external assurance through bodies such as the Sustainable Development Commission and its regional counterparts.

> New engagement techniques are required to capture the attention of the next generation of Australians. We cannot assume they will be 'naturally' more receptive to sustainability.

6. The framework relies on the most effective use of modern mass and social media and contemporary understandings of how people learn, what motivates them to change and what makes change desirable. BEIIC can play an effective role in facilitating this by further developing the business case for a suite of behaviour change strategies as proposed in this framework.

7. Research into the Australian built environment identifies a lack of showcase and best practice sustainable development examples. Some bodies are promoting sustainable development (such as housing departments), but these are being done in a limited way. Leadership in sustainable development through urban revitalisation is needed to demonstrate to the public what is achievable (and inspiring).

8. Based on the survey undertaken as part of this framework, consistency in messaging is a barrier to sustainable behaviour. Information on sustainable development as implemented through the strategy needs to be easy to understand, relevant to people's lives and based on quality research.

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Appendix A - case studies

Case Study: Lilyfield Housing Redevelopment, Balmain Road, Lilyfield (NSW)

This case study demonstrates the 5 star Green Star multi-unit rated residential building features of an affordable housing project in metropolitan Sydney.

The 88 unit complex in Lilyfield (comprising 24 one-bedroom units, 58 two-bedroom units and six three-bedroom units) takes advantage of the inner-west light rail system and does not provide any on-site car parking facilities.

Sustainability initiatives include:

» Natural ventilation (no air conditioning)

» Tilting of all north facing roofs to maximise solar access during winter and to avoid direct excess solar radiation in summer

» Water efficient fixtures throughout units and common area

» Fostering of community connections with the inclusion of a community garden

Case Study: Renwick Mittagong (Southern Highlands, NSW)

This case study demonstrates the incorporation of healthy planning principles into the development of a greenfield residential development in the Southern Highlands, 125 km south-west of Sydney.

Landcom, a NSW development corporation, aiming for leadership and excellence in economic, social and environmental sustainability, developed the masterplanned residential community in Mittagong.

When completed, Renwick will be home to up to 600 households.

Renwick has been designed to address social and environmental sustainability consideration. Landcom, together with the National Heart Foundation (NSW), have incorporated the Heart Foundation's 'Healthy by Design' principles. These active living design considerations informed the masterplan to create:

» Well connected walking and cycling routes

» Safe and vibrant streetscapes

» Links to public transport

Case Study: Coburg Solar City

This case study identifies a partnership approach to retrofitting sustainable energy solutions for low income households.

The Coburg Solar City project is a community enterprise providing energy retrofit services for up to 1,000 low income and public housing households (including smart meters and solar systems and water saving devices).

The Energy Hub includes a community-wide campaign providing practical information to residents and businesses in reducing their carbon footprint as well as training and employment for low income households. This forms part of wider Coburg Initiative, a sustainable urban redevelopment project for the Coburg City Centre.

Case Study: Beddington Zero Energy Development (BedZed) (UK)

This case study highlights the key features of a much celebrated mixed use sustainable development built by a housing association on a brownfield site in England.

Beddington Zero Energy Development (BedZed), is designed as a carbon neutral development. It is identified as a sustainable built environment in its approach to considering all aspects of domestic and working life to reduce carbon emissions whilst improving quality of life.

BedZed incorporates sustainable material sourcing, a renewable energy supply, a total water strategy, and an integrated transport system. Integral conservatories harvest winter sunlight and become open balconies in the summer. All buildings have a high thermal mass, reducing the need for central heating, and all dwellings face south to maximize opportunity for passive solar gain. The development is powered by a combined heat and power plant (110kWe) running on tree surgery waste to give overall net zero CO2 emissions. Passive solar building design, energy efficient appliances as well as removing the need for some appliances, i.e. installing efficient power shower fittings and wind driven ventilation cowls contributed to reducing electricity demand. After the first year of occupation, BedZed is performing towards targets to reduce consumption related to space heating, hot water, electricity, mains water and fossil fuel car mileage.

Case Study: C_life, Jatkassari, Helsinki

This case study demonstrates the design of a 'low2no' carbon sustainable development of a large building complex on a reclaimed harbour at the western edge of Helsinki's central business district. It recognises that up to 50% of the carbon footprint is associated with lifestyle choices.

C_life is a project conceived as a living factory of ecology where SITRA will spur innovation and entrepreneurship, attract start ups and businesses and demonstrate that people living in urban environments will enjoy a better quality of life in the future through homes, workplaces, buildings, districts and cities that are driven by ecological design principles.

C_life will be carbon negative by 2022 based on a transitional strategy starting from financial mechanisms and then moving to onsite and offsite physical strategies, and to broader energy and carbon solutions. The core principles are to use the wider context to our advantage and to promote cost effective, economically sound and replicable strategies and solutions.

It combines design with behaviour change by proposing to empower people by: developing engagement and awareness strategies, using technology that assists them in making decisions, producing positive reinforcement loops for people who live, work and visit C_life, using community as a network to share best practice and deomonstrating leadership in how C_lif creates and demonstrates a low carbon urban lifestyle.

Case Study: Quartier Vauban (Germany)

Completed in 2006 and housing 5000 residents, Quartier Vauban also represents sustainable living through community involvement, housing design, transportation, and alternative energy production and construction techniques. The 84 acre site lies southwest of Freiburg, Germany and was developed to meet the goals of: a transport system that encouraged car – free living and restrictions on car ownership, high density living for access to amenities, a mix of social classes; and priority for private developers and co–op corporate investors.

Targets towards Vauban as a sustainable city were introduced incrementally. In 1996, the city council introduced a target to reduce CO2 emissions to 25% below the 1992 level by 2010 and in 2002, the city set a target for 2010 that 10% of all energy consumed in the city should come from renewable enrgy sources. The city council launched a website that invites residents to calculate the energy savings potential hidden in their households in attempt to further educate residents and reach their energy reduction targets.

Appendix B - Australian housing typologies

Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
Cul-de-sac Example Census Collector District: Chapel Hill (Qld) 	Initially perceived as promoting security and neighbourliness, cul de sacs are considered as an urban form that limits connectivity and ease of access through the area, creating private roads that limit social inclusion. Cul de sac homes are situated in a uniform land use area, with access to shops, schools and other amenities and services usually a car drive away. Typical suburbs: Campbelltown (Sydney), Chapel Hill (Brisbane)	3.0 persons / household	1.2 persons per bedroom	165 m²	10 dwellings / ha	Distance - N/A	

Household typology narrative:

Cul-de-sac dwellers tend to be part of slightly larger than average households and their homes typically have a spare bedroom. They live in reasonably sparsely populated suburbs which because of their design, make getting around awkward. Community connectedness typically varies with stronger ties to neighbours within the cul-de-sac itself, and less integration with the surrounding community. Cul-de-sac dwellers face similar concerns to residents in McMansions, being very car-reliant and the issues this raises. While these homes are big, they are typically less than half the size of the McMansion, so their carbon footprint will be highly influenced by their travel burden more so than the energy they consume in the home. When faced with affordability issues, people living in cul-de-sacs may face challenging choices on where to work and how to travel there.

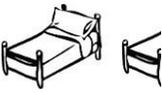| Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
McMansion Example Census Collector District: Payta Circuit, Kellyville (NSW) 	Mc Mansions have been described as a symbol of excess. They are usually located in new outer suburban areas and the building extends to the edges of the block. Mc Mansions usually house: 3+ bedrooms, multiple bathrooms, study room, games room, rumpus room, media room, multiple garage. Mc Mansion suburbs typically have poor public transport infrastructure. Typical suburbs: Kellyville (Sydney), Melton and Carolyn Springs (Melbourne)	 3.7 persons / household	 1 person per bedroom	365 m^2	6 dwellings / ha	 21.9 km	
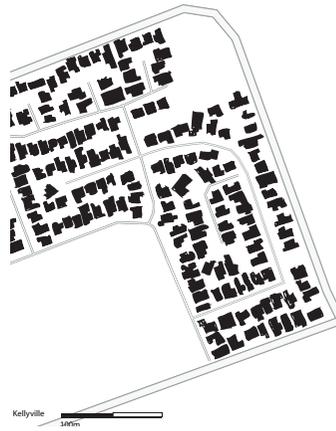
Household typology narrative:

McMansion dwellers tend to be part of larger than average households and have access to the greatest dwelling space per person than any other dwelling typology. Their homes are often located on the urban fringes which lend themselves to driving over walking given the typical distances to shops, services and town centres. McMansion dwellers are heavily car reliant, and tend to miss out on the opportunity that casual interaction with neighbours at street level provides. A key concern for this group is that there are few opportunities for incidental exercise which most of the population gets from walking between destinations, and they are therefore a high risk group for obesity and sedentary related diseases. McMansion dwellers are likely to have the highest carbon footprint and may have to confront energy consumption as a key issue if their energy bills reach beyond their own affordability limits.

| Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
Inner city terrace Example Census Collector District: Denison St, Newtown 	Originally providing housing for industrial workers of the inner city in the 1890s, terrace housing remains in the inner city areas of Australian cities, usually within close proximity to local shops, cafes and markets as well as being close to the CBD. A high proportion of residents travel by public transport. Typical suburbs: Annandale (Sydney), Carlton (Melbourne), Spring Hill (Brisbane)	 2.1 persons / household	 1.1 persons per bedroom	125 m^2	31 dwellings / ha	 5.9 km	 Newtown 100m
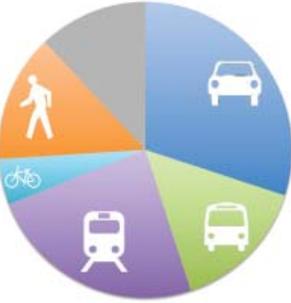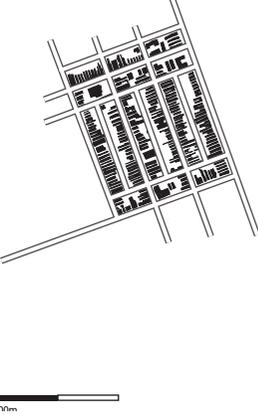
Household typology narrative:

Terrace dwellers live in densely populated areas in smaller than average households. They have many transport options available to them, and opt for public transport and walking more often than using their cars. Terraces are typically found in inner and middle ring suburbs and households who live in them have the opportunity to reap the benefits of living close to shops, markets, employment and leisure facilities.

Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
Inner city apartment Example Census Collector District: Gadigal Ave, Waterloo (Sydney) 	The apartment block provides high density living with areas with communal leisure areas of courtyards, swimming pool and BBQ areas, usually located close to public transport, supermarkets and restaurants. Typical suburbs: Green Square (Sydney), Docklands (Melbourne), Fortitude Valley (Brisbane)	 2.1 persons / household	 1.3 persons per bedroom	90 m^2	260 dwellings / ha	 5.9 km	 Waterloo 100m
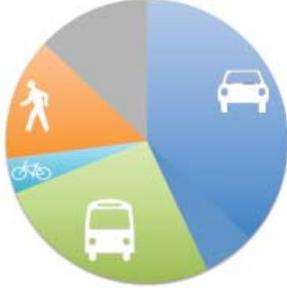
Household typology narrative:

Apartment dwellers share many similar benefits and opportunities to terrace dwellers. Along with terrace dwellers, apartment dwellers are likely to have the smallest carbon footprint when it comes to energy they consume in their dwelling and in getting around. However, unlike terrace dwellers, people living in apartments can sometimes miss the casual opportunities for interaction with neighbours and community members that comes from having a front door at street level.

Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
Rural residential house Example Census Collector District: Henderson St, Bathurst	Typically, Australian regional residential streets are wide with generous setbacks with lightweight housing. Residential buildings are modest and simple one storey detached dwellings. Town centres concentrate communal buildings and services including shops, cathedrals, commercial offices, hospitals, public administration, cultural facilities and tertiary education. Typical areas: Nowra, Orange (NSW), Daylesford (Vic), Toowoomba (Qld)	2.3 persons / household	1.1 persons per bedroom	180 m²	12 dwellings / ha	55.3 km	Bathurst 100m
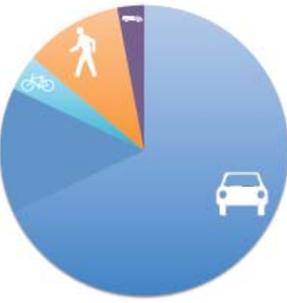
Household typology narrative:

Households in rural towns tend to experience levels of connectedness to jobs, shops and services linked to the nature and structure of rural towns. People close into the town centre will be able to walk and enjoy the benefits this brings, whereas those commuting from the edge of town are likely to drive. Households are of an average size but people do not live particularly close to each other.

Typology	Description	Average Occupancy (persons/ household)	Average Size (measure of persons/ bedroom)	Typical floor space area	Neighbourhood Density	Travel to work: distance and mode	Neighbourhood Character
Suburban Village House Example Census Collector District: Bega Road, Northbridge	Suburban villages such as Beecroft, Lane Cove, Manly and Hunters Hill in Sydney developed in an attempt to create a village atmosphere that blurred the boundaries between country and town. The suburban village home is typically made up of separate dwellings in stable, suburban areas. There are usually a limited number of non-residential uses, usually small scale convenience stores and cafes. Typical suburbs: Mosman, Beacon Hill, North Ryde (Sydney), Lower Templestowe, Mount Waverley (Melbourne), Rostrevor (Adelaide), Woodlands (Perth)	2.7 persons/ household	1.1 persons per bedroom	210 m²	14 dwellings/ ha	4.6 km	Northbridge 100m

Household typology narrative:

Suburbanites, typically living in detached dwellings, greatly benefit from retrofitting their dwelling with energy savings features (given the dwelling size and age of dwelling). In low density neighbourhoods, suburbanites typically prefer to use their cars to get around, and as a consequence may be confronted by the social and financial costs that this brings in terms of lack of connectedness and the cost of fuel. With access to lots of private green-space, suburbanites might use this to contribute to the weekly food budget by growing their own.

Appendix C - program architecture

The idea

Conduct a social experiment, involving Australian communities implementing sustainability within their existing built environments, and broadcast this in a reality TV format alongside social media platforms, which support the program and encourage participation and involvement on an even wider scale. The TV show will pit various communities against each other in a race to become Australia's most sustainable community. Using principles of 'sci-tainment' we will ensure that comprehensive pre and post measures of behaviour are undertaken. These 'facts' will be deployed throughout the show.

Why TV? When the UK public were asked where they would like to seek advice or information on sustainability issues, more than 30% of those surveyed looked to TV for information. Additionally, TV was identified as the main prompt for non-seekers of information on sustainable development ('Desperately Seeking Sustainability', National Consumer Council 2005).

Choosing several different types of built environment - each a 'classic' Australian type that most people could identify with - the show (and corresponding social media) follows the inhabitants of each as they attempt to create the most sustainable environment they can. Each team is given a budget for some 'makeover' (though they are always working within the constraints of their existing built fabric) and must pursue a series of strategies to change their behaviour and environment to beat other teams.

Clear goals are established to enable meaningful comparisons, despite the different places, spaces and people involved. Notwithstanding the rigour of the measurement, and research running alongside, the show's appeal will be in the personal relationships that are tested by the need to work together to create a better environment.
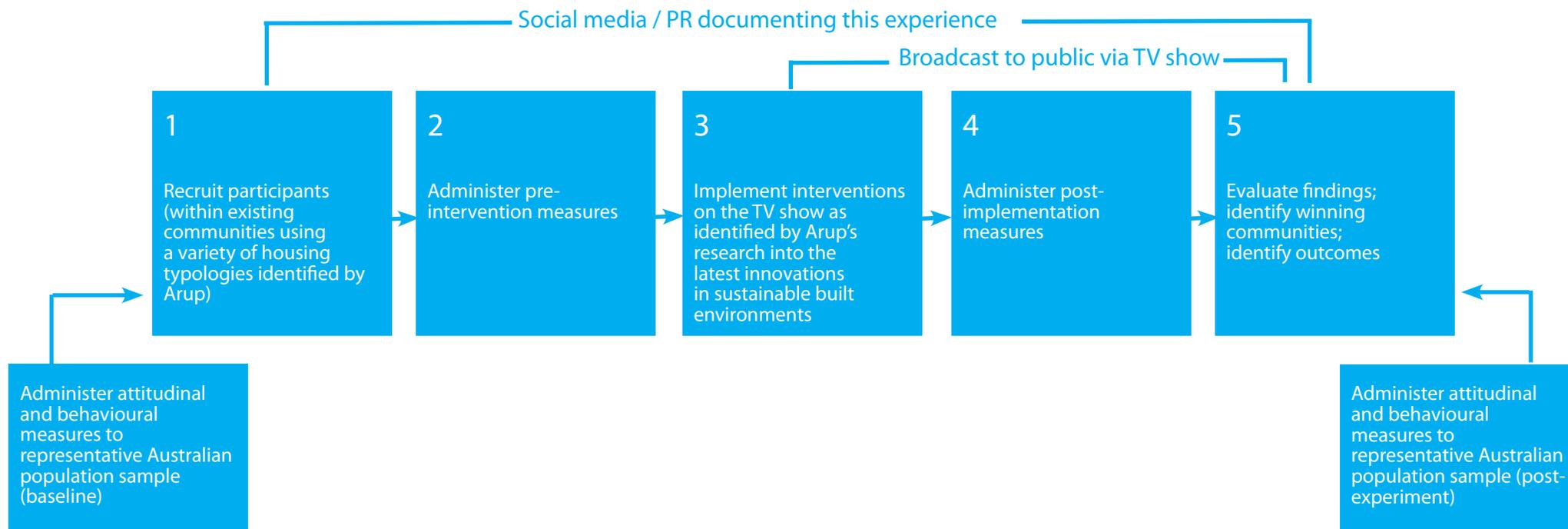
The show would be a stew of Grand Designs, The Apprentice, Survivor and Keeping Up Appearances, it will illustrate what living sustainably might mean — what sustainable development even means — as well the particular challenges for many typical Australian environments. It will explore the relationship between individual and collective actions, between the house/unit, workplace and the city, between neighbours and neighbourhoods. Additionally, simply by participating in the show as 'player', viewer or participant online, peoples' attitudes to sustainability are likely to change positively. (This is the Hawthorne Effect.)

It's a mainstream TV show — or possibly a recurring segment within a TV show — with significant internet-based social media activity around it. This balances both mainstream traditional media impact with ripples of interaction across new media platforms. Fundamentally, there is meaningful interaction for participants at home, who can engage with their own built environment via examples explored in the show and 'upload' and compete with their own modifications and retrofits. This will be key to the wider impact of the show.

Rather than looking at an individual house, the immediate neighbourhood is the immediate focus — the street, the block. This is partly to explore both individual and civic responses, in the relationship between individual response and the wider environment.

Partly this enables a competitive instinct, and partly it enables more compelling television, as it tests relationships. This wider focus also enables infrastructure and mobility to be evaluated (driving vs. public transport vs. walking/cycling).

Peoples' workplaces are also included, as well as their journeys between work and home, indicating what people can do to transform their workplace — again, this explores the balance between individual agency and collective agency.

Social media / PR documenting this experience

Broadcast to public via TV show

1

Recruit participants (within existing communities using a variety of housing typologies identified by Arup)

2

Administer pre-intervention measures

3

Implement interventions on the TV show as identified by Arup's research into the latest innovations in sustainable built environments

4

Administer post-implementation measures

5

Evaluate findings; identify winning communities; identify outcomes

Administer attitudinal and behavioural measures to representative Australian population sample (baseline)

Administer attitudinal and behavioural measures to representative Australian population sample (post-experiment)

Notwithstanding the rigour of the measurement, and research running alongside, the show's appeal will be in the personal relationships that are tested by the need to work together to create a better environment. The show's participants, being representatives from various Australian housing typologies, will translate sustainable development information at a practical level and make it relevant to Australian's lives.

Summary:

» The idea takes advantage of the popular interest in home improvement shows and subtly reorients it towards sustainable development.

» The idea takes advantage of the popular interest in reality shows and social media and subtly reorients it towards community engagement.

» The idea advantage of the latest technologies and services and subtly reorients them towards everyday and accessible environments.

Steps to getting the show made:

1. Select production partner
2. Provide seed funding to develop show reel
3. Develop script and make a show reel
4. Select distribution partner (i.e. what channel/network)
5. Develop funding with commercial partners
6. Pre-production
7. Production

Viewership (or reach) of the show would be captured via existing industry measurement techniques, but the actual attitudinal and behavioural engagement of the Australian public will be assessed using the customised pre- and post- measures as discussed previously.

Appendix D - test battery

Sustainability Interventions – behavioural measurement component

The following measures, Personal Wellbeing Index, Individual Attitudes and Opinions and Behavioural Measures, are designed as pre- and post-assessments of self reported individual effects of sustainability interventions.

Taking a baseline measure – i.e., prior to any interventions actually occurring – will allow for comparison data for each participant in the study.

Measurements taken from participants following interventions will allow for inferences about the effects of the interventions to be drawn.

Personal Wellbeing Index (PWI)

PWI is an internationally recognised index which would allow for comparisons across Australia and the world. It would be applied as a baseline measurement and then over time.

Our first working hypothesis for the Framework is that personal wellbeing (individual quality of life) will increase as a result of bringing about sustainable behaviours in one's immediate community environment. This is more likely to manifest itself in the specific domains of:

» Standard of living

» Personal relationships

» Personal safety

» Community-connectedness

» Future Security

Since scores on individual domains increase one's overall score of Personal Wellbeing, we would expect statistically significant (at the .05 level) differences between baseline scores and post-intervention scores.

Items:

1. How satisfied are you with your standard of living? [standard of living]

2. How satisfied are you with your health? [personal health]

3. How satisfied are you with what you are achieving in life? [achieving in life]

4. How satisfied are you with your personal relationships? [personal relationships]

5. How satisfied are you with how safe you feel? [personal safety]

6. How satisfied are you with feeling part of your community? [community connectedness]

7. How satisfied are you with your future security? [future security]

8. How satisfied are you with your spirituality or religion? [spirituality-religion]

An additional optional item (included for construct validity) may include: thinking about your own life and personal circumstances, how satisfied are you with your life as a whole?

Scoring Criteria

Scale Answer Format: "The following questions ask how satisfied you feel, on a scale from zero to 10. Zero means you feel completely dissatisfied. 10 means you feel completely satisfied. And the middle of the scale is 5, which means you feel neutral, neither satisfied nor dissatisfied."

Standardise all units into a 100 point distribution (e.g., 6 becomes 60).

These units are then summed to yield an average score of SWB – see test manual for more detailed information about norms and interpretation.

Individual attitudes and opinions

The following questions have been compiled as a means of consistently measuring attitude and cognition 'anchoring'.

In our study, we will be attempting to influence participants' behaviour through modelling desired behaviour and involvement in sustainability interventions. This follows a behaviourist approach.

Essentially, our intention is that participants' attitudes towards sustainability will change as a result of their behavioural involvement, which will then lead to further behavioural involvement. Since the nature of the study platform will be interactive (via TV), home viewers can also be expected to follow a similar behavioural trajectory.

When assessing effects of behavioural change, pre- and post-measures of attitudes and cognitions are useful indicators of internal change. Accordingly, these questions should also be administered at baseline and then post-intervention, for the purpose of score comparison.

» Affect

1. Overall, how do you feel about [intervention]?

Extremely Positive / Positive / Neutral / Negative / Extremely Negative

2. How open are you to the idea of sustainability?

Extremely open / Very open / Somewhat open / Not very open / Not open at all

» Environmental Contribution

3. How helpful do you think [intervention] is to the environment?

Extremely helpful / Helpful / Neutral / Not very helpful / Extremely unhelpful

» Personal Contribution

4. How helpful do you think [intervention] will be to you personally?

Extremely helpful / Helpful / Neutral / Not very helpful / Extremely unhelpful

» Ease of Implementation

5. How easy do you think [intervention] will be to implement for your own circumstances?

Extremely easy / Quite easy / Neutral / Difficult / Extremely difficult

6. What types of information about sustainable interventions have you sought in the past?

» Convenience

7. How convenient will it be for you to undertake [intervention]?

Extremely convenient / Somewhat convenient / Neutral / Inconvenient / Extremely inconvenient

» Cost

8. How costly will it be for you to undertake [intervention]?

Extremely costly / somewhat costly / neutral / inexpensive / extremely inexpensive

9. How affordable do you think behaving sustainably is?

Extremely affordable / Very affordable / Affordable / Difficult to afford / Extremely difficult to afford

Behavioural measures

To measure behavioural change as a result of each intervention that is undertaken, pre and post-measures would also have to be developed for current and subsequent behaviours.

These should encompass frequency of behaviour, intensity and duration. For example:

Pre Intervention:	Post intervention:
Transport to work: Car (drive by self)	Transport to work: Car (share with 2 others)
Distance in kms:	Distance in kms:
How often this method of transport is utilised/week:	How often this method of transport was utilised/week:
Engine/car type:	Engine/car type:
Estimated carbon emissions:	Estimated carbon emissions:

Appendix E - matrix of mediums

Medium	One-way communication	Person-to-person/ Social media communication	Two-way communication	Experiential
Type of campaign	TV ads e.g. 'Sustainability – Make it Your Sport'	Blogs/Facebook e.g. 'Sustainable September WA' Facebook page	Interactive, e.g. reality programming with voting, websites, e.g. Penrith City Council Do It Yourself Sustainability Calculators	Community programs e.g. 'In My Back Yard'
Relevant behavioural change theory	Cognitive	Constructivism	Humanism	Behaviourism
Strengths	Broad reach, instant message delivery, allows message repetition in short time period, multi sensorial messages (visual, audio, animated), good to support brand awareness and prestige (sponsorship), good for product launch, can be state based or national	One to one communications, delivered in a relevant context, consumer already interested/engaged, allows consumers feedback/interaction/engagement, allows details, cost effective, allows longer term relationship with consumers, geographically targeted, specific audience selection (by age, gender etc.), good for product and brand, long term communication rather than launch	More ownership of message, increased sense of personal responsibility/ involvement, raising brand image and recall (no product details), develop positive brand association, broad reach possible	One to one consumer reach, can be expensive, efficient reach at a small scale, delivers brand/ product experience, high consumer engagement
Weaknesses	Non targeted/high wastage, expenses-requires investment to make it efficient, low cut through, low engagement from consumers, short term exposure to consumers, no extensive details provided	Smaller reach, requires consumer active participation, not broad reach, requires daily campaign management (conversation management)	Requires consumer active participation, needs to be motivating/ well constructed for consumer action, requires endorsement (longer and complex process)	Only communities themselves are reached (smaller reach), need tangible outcomes to be made explicit to participants
Action arising from	Low consumer response, general awareness only, one dimensional out take (one core message only)	High consumer response/engagement about your brand/product	Consumer engaged through content - providing relevant information/ content	Consumer directly in contact with Brand/Product
Best used for	Brand awareness, product launch, relaunch, reaching broad audience in a generic way	Brand/product engagement/ advocacy, long term relationship, reaching specific groups in a personal/ relevant way, getting feedback from consumers	Brand prestige/association, engagement, reaching broad groups with interesting/involvement content	Product trials, brand experience, new product launch/variant, reaching one to one consumer directly (brand experience or product in hand)
Cost	High	Low	Low-Medium	Variable
Indicators of success (able to be measured / monitored)	None (can only guess at how many people saw) potentially sales/visits	Comments and feedback, people's actions e.g. no. of 'fans'	Voting	Participation and sales / visits

Appendix F - survey results

Survey Summary

An online survey was conducted to gather experiences from members of key built environment bodies in influencing behaviour change and public engagement in sustainable development. The survey was distributed to participants via email on the 25 March 2010 with an extension to allow for additional responses until the 9 April 2010.

53 members of key built environment bodies were invited to participate in the survey. Contacts for the survey were provided by BEIIC. They consisted of BEIIC members and industry association stakeholders identified by BEIIC.

The survey consisted of eight open ended questions around the areas of:

»   Challenges and success factors for influencing behaviour change regarding sustainable built environments

»   Experience specific to short term and long term behaviour change programs regarding sustainable built environments

»   Barriers to individuals and institutions embracing change towards a sustainable built environment

»   Mechanisms that will influence the wider environment (i.e. home, street, workplace) beyond the building level

The aim of the survey was to gather local experiences and innovation in behaviour change programs regarding sustainable built environments.

Results

From the 53 members consulted, 15 responses were gained. The results are summarised below.

1. Which of the following best describes your speciality?

The respondents were from a variety of specialties associated with the built environment. The chart below indicates that a majority of the respondents are working in areas related to construction and development and sustainable development.

- property development
- urban planning
- sustainable development
- construction and development
- project management
- government policy
- other
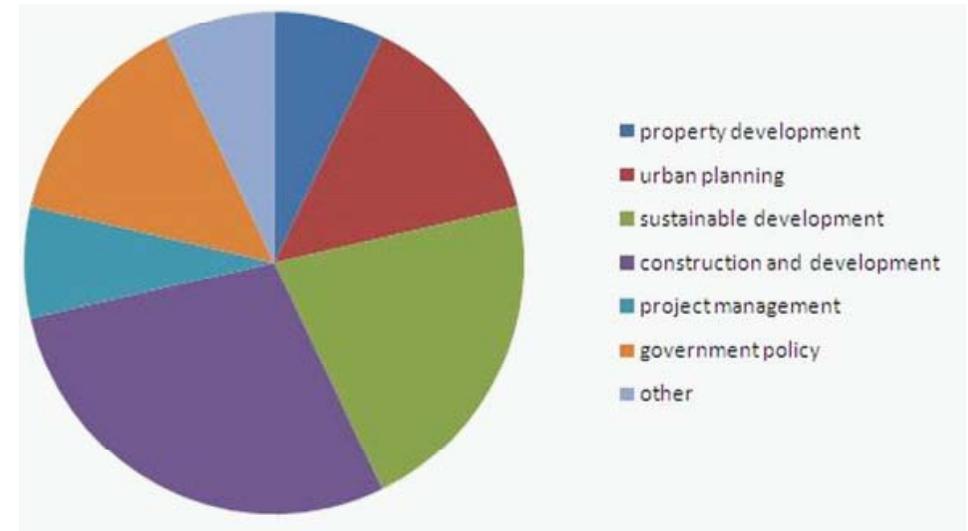
2. What has been your project experience aimed at influencing individual or institutional behaviour towards more sustainable practices?

The respondents mostly have experience in developing and implementing government programs and schemes. Other respondents had experience in sustainable design and practice, developing and training industry and businesses in sustainable practice, local sustainability initiatives, and information provider to professionals in the built environment industry.

3. What do you think has worked in terms of achieving effective behaviour change over the LONGER term?

Education	» Understanding that sustainability is everyone's responsibility
	» Tailoring sustainability campaigns to specific audience
	» Enlightened self interest
	» Provide examples of how everyday things can be done differently
Regulation and incentives	» Government leadership
	» Regulation prescribing standards
	» Green building rating schemes etc
	» Cost incentives
Leadership	» Government leadership
	» Positive and committed people engaged in sustainability issues
	» Collaboration by industry corporations

4. What do you think has worked in terms of achieving effective behaviour change over the SHORTER term?

Education	» Highlight simple changes allow significant sustainability improvements
Competitions	» Paid competitions to drive interest
Regulation	» Restrictive targets, eg. water efficiency measures
	» Strong policy and regulation
Incentives	» Prohibitions e.g. banning incandescent light bulbs
	» Cost disincentives such as the Waste Levy
	» Price and cost imposts
Other	» Projects with tangible outcomes that align with people's personal values and interests

5. What do you think hasn't worked in terms of achieving effective behaviour change over the LONGER term?

| One tiered approach | » Encouraging savings based on cost savings alone |

Inconsistent messages	» Constant changes of the sustainability message
	» Political issues overrunning sustainability issues
	» Conflicting scientific information
Emotive arguments	» Convincing people that they have to "believe" is dangerous
	» Moral argument
Lack of regulation	» Lack of regulation to implement sustainability initiatives

6. What do you think hasn't worked in terms of achieving effective behaviour changer over the SHORTER term?

Limited pressure to change	» No pressure to continue good practice
	» Low prominence of energy in corporate budgets. There is a need for energy efficiency to become mainstream business concern rather than a short term response to government initiatives
Inconsistent messages	» No clear message
	» Scare tactics
	» Limited understanding of the issues therefore people don't engage with them
Complex systems	» Programs that are costly to implement
	» Programs that are complicated to administer
Lack of national consistency	» Lack of national consistency in regulation and enforcement
Lack of working examples	» Lack of good case studies that demonstrate that sustainability saves money

7. Sustainable development is often perceived as not appealing. What barriers do you think exist which act against individuals and institutions embracing a more sustainable built environment?

Costs	» Initial costs of changes towards sustainability initiatives
Negative perceptions of going green	» 'Un sexy' perception of going green
	» Fear of change
	» Losing comfort; "putting up with less"
	» The media dismissing environmental concerns
	» Perception that sustainable development belongs to a certain type of people
Understanding	» Lack of understanding
	» Lack of common vocabulary
	» Low levels of green skilling
Limited investment	» Investors have been slow to invest in emerging solutions
	» Fears of unreliable technology
Time	» Not enough time to embed changes
Social and business climate	» Change as an individual is limited by the collective. e.g. change in apartment is limited by Strata
	» Business environment does not encourage innovation
	» Short term business culture

8. What would it take for the market to deliver a more sustainable environment at a larger scale (i.e beyond the building level)?

Costs	» Costs of products and services more aligned with impacts on the environment
	» A more convincing business case for sustainable built environments
Legislation/policy	» Legislation/policy to deliver at least a baseline improvement in sustainable development
	» Sustainable practice as a mandatory KPI
Global change and policy initiatives	» Larger scale change towards a sustainable environment
	» Long term behaviour change is likely to be impacted by commodity prices on world markets which will shape international and national policy

Whole of government approach	» Embracing a consistent national framework for sustainability assessment criteria
Media	» Ban on advertising, promotion and glorification of unsustainable lifestyles
Appeal to people's values	» Engage people in the possibilities of future communities
	» Reinforced community role in promoting sustainability
	» Broad change in society's value set concerning the rights and wrongs of increasing resource consumption
Understanding	» Better understanding of benefits of sustainability (cost, productivity, running costs, performance, emissions, resource use etc.)

9.   Any other comments

Other suggestions relevant to behaviour change regarding the built environment included:

»   It is essential to promote enlightened self interest.

»   There is a need for major cultural change and establishing a new Australian dream where communities connect physically and mentally.