

# Insights from scenario thinking

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## The Belconnen Project



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*There is only one thing about  
which I am certain, and that is that  
there is very little about which one  
can be certain.*

*Somerset Maugham (1874 - 1965)*

## Disclaimer

Projections of and discussion papers and 'conversations' about the future involve inherent uncertainties, and projections, discussion papers and conversations by themselves cannot suggest any particular course of action. Readers should not rely on the information presented here for particular actions or decisions. The views, opinions, findings, and/or conclusions expressed in this report are strictly those of the author. They do not necessarily reflect the views of the Riverview Group. The author takes no responsibility for any errors or omissions in, or for the correctness of, the information contained in this report. The report is solely intended to inform and stimulate wider debate.

## Introduction

Is it possible to make predictions about a suburb in Canberra four decades from now? The answer is simple: no, it is not. Nevertheless, you can learn a lot by trying. Outlining the future is an effective and useful way of analysing the present. It gives an understanding of how our society might develop and how it is possible to achieve social goals. This may also contribute to qualifying the choices we make each day – to shape development and ultimately the world we want to live in.

If we want to live sustainably doing more of the same – *the Business-As-Usual scenario* – is not an option.

This report is simply offered as a contribution to ongoing discussions and efforts to engage stakeholders in the Belconnen project. It is hoped that the discussion of key driving forces and uncertainties affecting the neighbourhood's evolution, and the scenario examples that have been developed to illustrate how these factors may unfold by 2040, will be a useful source of insight for even the casual reader. But we have two primary audiences in mind for this report. One is business and public sector leaders who are actually involved in decisions about the further construction of Belconnen. The other is a broader group of stakeholders, especially the myriad communities who are interested in and might be affected by urban development in Belconnen.

We hope these scenarios will inspire broader conversations and have some small influence on wiser choices so that Belconnen realises its potential to enhance residents' prosperity and well-being.

**Kate Delaney & John Robinson**

## About the process of scenario development

The Riverview Group has assembled a treasure trove of resources and information that will help us understand characteristics, trends, and patterns that will shape our built environment, our ways of living in Belconnen, in Canberra, in Australia and in our future. This report is only one of the resources that the Riverview Group has commissioned. For instance there is an ancillary report addressing attitudes towards climate change. The main purpose here is to help ‘future-proof’ the thorough planning process by nudging people – to think about a broader range of plausible futures – to think ‘what if.’

The process used to develop the scenarios generally followed all of the steps outlined in Table 1. The principal author attended Belconnen development workshops and listened to the views of the team of expert planners, an online survey was distributed to the team, and a literature review/horizon scan completed. A few individual meetings with some of the team were also scheduled. From there the author developed the scenario insights report which has been peer reviewed within John Robinson Consulting Services Pty Ltd. These preliminary scenarios will be tested in at least two workshops in early 2014.

When you read this report please keep in mind:

- The preliminary scenarios are only being used to prime further discussions about what the future might be like and are sufficient for our intended use.
- The research highlighted in this report was chosen to catalyse ‘different’ thinking – it is not exhaustive (and does not need to be for our purpose which is ‘questioning the future.’)
- You, the reader, might have access to other research, and hold equally challenging views about the future, and you should feel free to weave this into any discussion with the team and other stakeholders.
- Given the information presented here, and your own sources, you, the reader, should be able to develop different scenarios than those included here, if you wish to do so.

One other point that should be made is that different people have different ‘time styles.’ Each of us weighs different information from the past, present and future to create a *blended and* unique way of looking forward. Some people are mostly analytical so they are most comfortable thinking about what has happened in the past and about reducing risk – they look at what we already know in great detail; other people are most comfortable thinking about the here and now (the present) and how to get things done – changes in plans are disturbing to them; and then there are people who focus on ‘what’s next’, these people engage most of all in speculation, intuition and imagination and they bring ‘hope’ – that things can change.

It would be nice to remember that when you are speaking to another person interested in the Belconnen project, they might be looking at the same information as you with a different ‘time style.’

*Ask yourself, how old will you be in 2030 or 2050? What might you then have wanted your current self to have done today?*

## The scenarios in brief

We developed eight scenarios using three key drivers of change – the drivers of change were economic vitality, social cohesion, and environmental concern. Of the eight scenarios three were more fully developed:

A **'Perfect storm'** – the first scenario – reflects a future where Australian governments, businesses, and communities respond ineffectively to poor global economic circumstances over which we have no control. We are poorly positioned and ill-prepared for the future.

The next scenario – **'Snakes and Ladders'** – allows us to explore a world of high technology that is 'clannish,' a level of distrust between groups and in governments has weakened the social fabric.

In **'Return to Burley-Griffin'** – the future is not perfect – but Australians generally, and Canberrans in particular, are definitely more in tune with and place greater value in the natural environment having recognised that it is a significant contributor to our well-being. Canberrans have deepened respect for their 'garden city/Bush Capital' roots.

## Thinking ‘what if’ about the future

Belconnen has and will have its good points and its bad points in 30 years, but there are also many things based on hard data that we know with a higher degree of certainty. Even with the same facts, there are many opinions about Belconnen today and in the future. How rich, creative or safe can we expect it to be?

We cannot predict the future, however, if we have challenging conversations about future possibilities we can rewrite the way we think about the future.

One way we can organise our thinking about the future is to paint different pictures (scenarios<sup>1</sup>) of how the future might unfold whether ‘desirable’ or ‘dark.’ This might be accomplished by combining what we can very reasonably conclude about the future, given current trends, with the changes that are and will remain very unclear – those changes that are we can neither reasonably nor accurately ‘predict’ or ‘project’ into the future.

Usually three or four scenario stories are developed because we are thinking through what might happen, not betting on what ‘will’ happen. No single scenario ever captures the future with accuracy. Instead, the set of scenarios as a whole contain the elements and conditions that we will face in the future. In order to fully engage with the scenarios, you must a) avoid the desire to choose a scenario as a more likely or desirable future; and b) suspend disbelief concerning the possibilities that stretch beyond your level of comfort.

Scenarios help us explore how our decisions today might play out over time. The decisions we make today will directly shape our ability to meet the circumstances we might face in the future; these decisions are shaped by the assumptions we make about the future.<sup>2</sup> Scenario thinking helps us question what we – perhaps inappropriately – believe or assume to be true about the future (Figure 1). For instance, Figure 1 asks whether we need a permanent Capital City in Australia; couldn’t we rotate the capital as we rotate the Olympics?

Creating more than one story about what might happen in the future is important. Reviewing a diverse range of plausible futures and the challenges and needs associated with each allows us to deepen our understanding of, and value, and discuss different points of view.

People’s beliefs about the future of society – encompassing projected changes in society as a whole (e.g. levels of crime, poverty, economic prosperity) and changes in the people who constitute society (their character and values) – are often very different. The author and the broader Belconnen project team fully acknowledge that different people looking at the information presented might have chosen to use a different set of descriptors for each uncertainty, or they might have renamed the key uncertainties, or combined them in another way. Remember that we are not

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<sup>1</sup> Scarce & Fulton (2004) say ‘Because scenarios are hypotheses, not predictions, they are created and used in sets of multiple stories, usually three, or four. These capture a range of future possibilities, good and bad, expected and surprising.’ Scarce, D., Katherine Fulton, et al. (2004). What if? The Art of Scenario Thinking for Non-profits. Global Business Network. [http://www.monitorinstitute.com/downloads/what-we-think/what-if/What\\_If.pdf](http://www.monitorinstitute.com/downloads/what-we-think/what-if/What_If.pdf)

<sup>2</sup> Decisions have to be made today based on current knowledge, and cannot be made conditional on future events. For policies that can be changed fairly rapidly, it is feasible to take action immediately and adjust the policy when it turns out to be the wrong one or when more knowledge about outcomes becomes available. It becomes quite another matter when policies have a long lead-time and/or when they involve investments with large sunk costs. In such circumstances, policymakers have to trade off the benefits of waiting (with the chance of amassing more knowledge and learning about the direction of future developments) against the costs of delay.

trying to pin down a single future; we are trying to open our minds and discuss a range of plausible futures. We hope that it is clear that the Belconnen project team does not have a monopoly on views about what might happen. We would encourage you to create a different set of scenarios to catalyse our mutual thinking and discussion if you wish to do so.

The measure of a successful set of scenarios is twofold: by getting us to imagine different paths that the future may take, they help us to be better prepared for long-term contingencies; by identifying key indicators, and amplifying signals of change, they help us ensure that our decisions along the way are flexible enough to accommodate change. In essence it helps planners 'future proof' their plans. The notion of 'future-proofing' refers to the process of attempting to anticipate or predict future developments in order to: a) prevent, or at least mitigate, possible negative consequences; and b) seize opportunities as and when they arise.

Peter Guthrie from Cambridge's Centre for Sustainable Development makes an interesting argument about future proofing plans:

*Many new urban developments are being planned in this country, where assumptions are made about how people will travel when they live there. Allowance is invariably made for car, bus and cycle transport. But nobody has considered what will happen if car travel completely disappears from intra-city transport in future; nor, on the other hand, what will happen if in 15 years' time it's only possible to travel between cities by car. No-one has played out these different scenarios in designing the development so that it has the potential to cope with these potential alternative futures.*

*This is common with transport infrastructure. How will people move around in the future? Cyclists and pedestrians are currently seen as very 'sustainable' and worthy; transport consultants always look very earnest when they're talking about cycling. But it's hard to imagine this carrying on far into the future, unless we're seriously expecting to carry on driving around in something that was designed in the 19th century. Surely, at some point, one could imagine the physical form of bikes changing, so that cyclists are less exposed to the elements than they are today. How is infrastructure going to cope with that?*

*'What if bicycles become electrically powered in the future – at what point would they cease to qualify for today's cycle-paths?'*

*Instead of asking these questions, most strategy for 'sustainable' transport planning is around maintaining the status quo. We say we'd like a few more people to get out of their cars, and a few more to get into a bus, and we can't afford a train, and we'd like people to live closer to their work, and we'd like people to walk a bit. And that's about it. That's not future-proofing – that's designing for what happens on the on the day that you start using the infrastructure!' (Guthrie 2013)*

Guthrie concludes with the observation that 'To really make the most of planning sustainable infrastructure, we need to look at decision-making across a project's whole lifecycle. It is the early design stages that most critically determine whether a project will be sustainable and future-oriented or not.'

Figure 1: An entry in the 'Capithetical' competition for Canberra's centenary that suggested we should rotate that nation's capital every 15 years

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## Showcasing face-to-face Democracy

BY HANNAH ARENDT  
STATE POLITICAL EDITOR

The Roving Capital Initiative will re-connect our decision-makers with local communities enabling them to have a say about the way national and international issues affect those communities in place. A failing of a single, fixed national Capital is that the political system (bureaucracy and politicians) becomes removed from the people and the places they represent. Relocating the national Capital every 15 years can minimise this misalignment by strengthening the connection in several ways:

- It brings political decision makers face-to-face, daily, with many issues facing Australians.
- It places these decision makers physically closer to the consequences of problems facing communities and the consequences of policies and solutions (good and bad).

It forces governments to be more reflexive and flexible - to see how a policy develops and responds on the ground, and enabling reflection and response to the outcomes as they occur.

- It directs attention that stimulates ideas and investment, demonstrating innovative solutions to the key problems facing that local community which can be translated and transplanted nationally.

# Cities to bid for Roving Capital

BY SVEN CARTER  
POLITICAL REPORTER

The Australian Government has invited cities and towns across the country to apply to be Australia's next Capital city in 2030.

The successful applicant city will be the first 'Roving Capital' under radical reforms to the Australian constitution following the 2012 referendum. The selected city will become home to the Senate and House of Representatives and respective government departments,

plus essential administrative staff, for a period of 15 years, before the Capital moves to another location.

The Roving Capital Initiative was developed at the height of the political, economic and environmental crises that engulfed Australia four years ago. It is designed to bring the nation's decision makers face-to-face with local communities around the country - and see first-hand how these national and global issues impact everyday Australians.

Periodically relocating the federal seat of power is a world first and reflects 21st century ideals of good government. It is hoped that the events leading up to establishing a new Capital would provide an opportunity for reinvigorating public participation in the political sphere.

Citizens are encouraged to contact their local council with ideas about how their local region can respond to the issue of sustainable city design and climate change.

### FASTFACTS

- The Roving Capital is an opportunity for the nation to focus on dealing with national issues face-to-face.
- The moving investment will not only support and bolster the local economy but will showcase to the world how we can iteratively innovate to improve our government, our cities, our communities, our environment and our economy.

### Why a Roving Capital?

BY HUNTER THOMPSON

Canberra, Australia's first national Capital, is one of the 20th century's best examples of a planned political Capital. It reflects many of the characteristics of a post-industrial and post-colonial city that sought to establish a common identity for the newly federated states.

If Capital cities symbolise national identity, promote national ideals and showcase national culture, then it is reasonable to ask two questions: What might a new national Capital for Australia look like in the 21st century? and how should a 21st century Capital respond to the shifts in the political, economic, social and environmental landscape that occurred over the last century?

The first decade of the 21st century saw changes that forced Australians to reflect on the kind of identity, culture and ideals they wanted their Capital to reflect. At this time we also started to question the type of political power structures and decision making required to address fundamental questions and issues facing the nation.

In Australia, the multitude of challenges we face have led us to reconsider uses of technology, and virtual communication, and how we will approach the ongoing global financial meltdown, energy and water shortages, climate change, sea level rise, threats to biodiversity, a growing and ageing population, health and human rights crises (particularly for indigenous peoples) and refugees.

In response, Australians have

## The process – how will it work?

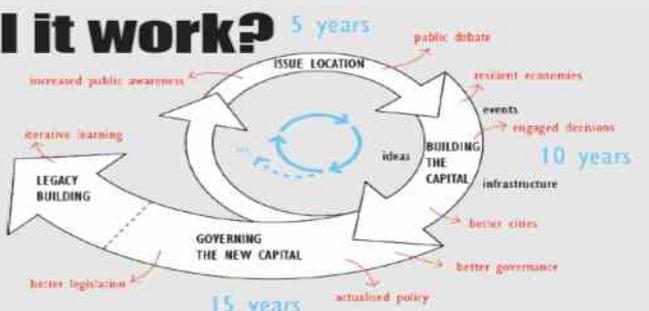
**Deciding the Capital location and its attributes**

The national Capital will be determined by how well a place can respond locally to national issues.

It is a 3 phase process involving all levels of government and an opportunity for all citizens to engage in the 'big decisions' through

a program of 'ground up' events including Capital Ideas Festivals and Exhibitions and the establishment of Capital Ideas Centres around the nation. The consultative process will determine what and when infrastructure is required as well as what legacy will be left behind.

The 3 phase process and timeline is illustrated and described below:



**PHASE 1:** selection of national issues

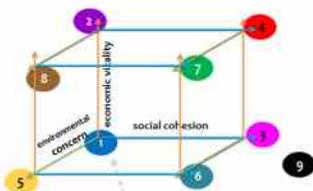
**PHASE 2:** state & cities bid for capital

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## Building scenarios

Scenario stories are developed through a number of steps. A focus for the work is first established, followed by research into the ‘driving forces’ – social, economic, political, and technological. Driving forces can be defined as major sources of change that impact on the future. The next step is to describe the ‘scenario logic’ or pattern of interactions that explain how the driving forces could combine to determine future conditions. The driving forces are divided into ‘pre-determined elements’ (i.e. what is inevitable, like many demographic factors already in the pipeline) and ‘critical uncertainties’ (i.e. what is unpredictable or a matter of choice). The critical uncertainties are ranked according to importance/impact and uncertainty. This analysis is then used to create scenarios – stories of future worlds that convey a range of possible outcomes. The scenario implications are then identified and finally appropriate leading indicators are monitored on an on-going basis. Table 1 outlines one approach used to build scenarios. Another resource featuring scenario tools for sustainable development is the aptly named ‘*Scenarios for Sustainability*’.<sup>3</sup>

Table 1: How to build scenarios

N <sup>o</sup> . 1 (focus)	N <sup>o</sup> . 2 (driving forces)	N <sup>o</sup> . 3 (scenario logic)	N <sup>o</sup> . 4 (story)	N <sup>o</sup> . 5 (so what?)
Ask a relevant question	Identify & discuss: <ul style="list-style-type: none"> <li>what is inevitable</li> <li>what is unpredictable</li> <li>what is a matter of choice</li> </ul>	Think about how different critical uncertainties might work together to create different future worlds (see Figure 5 later in this report)	Describe what Belconnen looks like and what living in Belconnen is like in 2040	What new ideas do you have about what you can do today to create the best possible neighbourhood in 2040
What features in the built environment and what interventions or programs (in the community as it develops) will help us achieve the Belconnen vision?	For example, the degree of resident community-mindedness in new areas of Belconnen	 <p>This is a diagram illustrating the interconnectedness of various parameters. It features a central node (1) connected to nodes 2, 3, 4, 5, 6, 7, 8, and 9. The nodes are arranged in a roughly circular pattern. Node 1 is at the top, node 2 is top-left, node 3 is top-right, node 4 is right, node 5 is bottom-left, node 6 is bottom, node 7 is bottom-right, node 8 is left, and node 9 is right. Lines connect the nodes, forming a complex web. Labels include 'environmental concerns' near node 5, 'economic vitality' near node 2, and 'social cohesion' near node 7. Below the diagram, there is a small text box: 'This is a statement on "future". The parameters are fragile social cohesion, lethargic economy and "old" later environmental concerns. What would it be like to live in this world?'</p>	Paint a picture of your neighbourhood to an overseas niece or nephew	How do you encourage development of ‘what is nice?’ &/or how do you discourage ‘what is nasty?’

<sup>3</sup> [http://scenariosforsustainability.org/howto\\_recipes.php](http://scenariosforsustainability.org/howto_recipes.php)

## What are scenario drivers?

Scenario drivers are defined as follows (Alcamo and Gallopín 2009): 'Driving forces ... represent the key factors, trends, or processes which influence the situation, focal issue, or decisions, and actually propel the system forward and determine the story's outcome. Some of these forces are invariant over all scenarios; that is, are to a large extent predetermined. Some of the driving forces may represent critical uncertainties, the resolution of which fundamentally alter the course of events (Schwartz, 1991). Those drivers influence, but do not completely determine, the future. Thus, while the initial drivers are the same in all scenarios, the trajectory of the system follows a different course in each of them.'<sup>4</sup>

- Scenario drivers that are a matter of choice – to a degree – are described beginning on page 13
- Scenario drivers that are critical uncertainties are described from page 15

Biggs et al (2011) argue that it is increasingly likely that we will experience crises that are coupled – they will occur concurrently. They believe this will happen because of: (1) the increasing strength of global vs. local *drivers of change*, so that changes become increasingly synchronized; and the (2) unprecedented potential for the propagation of crises, and an *enhanced risk of management interventions in one region becoming drivers elsewhere*, because of increased connectivity. If true, we will need to develop an increased tolerance of uncertainty and surprise (strengthening early detection and response to shocks) and improve our flexibility (capacity to adapt and learn).<sup>5</sup>

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<sup>4</sup> 'The distinction between *driving* and *driven* forces is not always clear-cut. Many drivers are in turn driven by other forces; for instance, environmental changes impinge upon the world water system but are also the consequences of other drivers or of changes in the water system itself (e.g. climate change which is also driven by population and economic changes; soil erosion affects the water cycle and land use, impinging back upon the water system).' Also – Gallopín, G. C. (2011). Global Water Futures 2050. Five Stylized Scenarios. Paris, UNESCO-WWAP *United Nations World Water Assessment Programme*.

<sup>5</sup> Biggs, D., R. Biggs, et al (2011). Are we entering an era of concatenated global crises? *Ecology and Society* 16(2): 27 <http://www.ecologyandsociety.org/vol16/iss2/art27/>

## Driving forces: changes that are a matter of ‘choice’ (i.e. we can influence, shape/create)

To different degrees, we might be able to influence and/or anticipate planning decisions that affect our neighbourhoods (see also Figure 2) such as:

- How sparse or dense the neighbourhood population might be
- How affordable housing is<sup>6</sup>
- The level of public transport use, the proportion of motor vehicle ownership (i.e. how car dependent lifestyles are)<sup>7</sup>
- The adoption of green infrastructure (like living lights)
- The extent of resource use per person (water, energy, land)
- The nature of the built environment (e.g. Does the neighbourhood design contribute to an active or sedentary lifestyle? Does the built environment facilitate social connection?)
- Access to ‘social’ services (schools, police, hospitals, shops)
- Preparedness for natural disasters (vulnerability, resilience)<sup>8</sup>
- The flexibility of the planning regime

Figure 2 shows how urban planning requires decision makers to make trade-offs amongst issues, based on their relative value, importance and salience. Figure 2 also implies that social issues that matter to people do not exist in isolation to economic issues. It should be clear that a single issue cannot be examined in isolation, as the value of any one social, or political or economic issue can only be determined by how it stands against other competing issues.<sup>9</sup> All of these types of issues form part of people’s desires (‘what we want’) and lifestyle (‘how we live’) preferences.

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<sup>6</sup> Keating (2011) noted that the potential for a ‘housing revolt’ by young people who cannot afford home ownership was recognised. ‘A generational divide on this issue could create political cleavage.’

<sup>7</sup> For instance, a second car in a household not only has an effect on car usage but also has a dramatic effect on the space requirements on site, the house design, and the on-street space required.

<sup>8</sup> The notion of resilience in ecology was first introduced by the Canadian ecologist C.S. ‘Buzz’ Holling. In the (2006) book ‘*Resilience Thinking, Sustaining Ecosystems, and People in a Changing World*,’ Brian Walker and David Salt define resilience as: ‘The capacity for a system to absorb disturbance and still retain its basic function and structure.’

<sup>9</sup> Interestingly, a commonly held view of sustainable development recognises the folly of considering a ‘single issue’ in isolation: (1) the finite reserves of non-renewable resources and the importance of using them wisely and, where possible, substituting them with renewable resources; (2) the limits of natural life-supporting systems (ecosystems) to absorb the effects of human activities that produce pollution and waste; and (3) the linkages and interactions between environmental, social and economic factors when making decisions, emphasising that all three factors must be taken into consideration if we are to achieve sustainable outcomes, particularly in the long term; and (4) the well-being of current and future generations as a key consideration (Taylor et al 2002). So too does the WEF (WEF 2014) in its *Global Risks 2014* report.

Figure 2: MJP Architects in Spitalfields in the United Kingdom show how different planning decisions could affect the design of a neighbourhood<sup>10</sup>

Different concepts of a walkable 'garden suburb' from an architecture firm in the United Kingdom				
				
35 detached dwellings per hectare (dph)	50 townhouses	'L' Shaped Houses at 50dph which incl. parking in the plot	Mews Shaped Houses at 95dph	Flats at 180dph
Detached houses fulfil suburban aspirations and can be planned at a higher density than might be expected. A key characteristic of the layout is to stagger the houses to increase their separate identity and their privacy.	The 6m frontage house is familiar in volume house building with kitchen/dining at the front, living room and the back facing garden the areas of which are maximised in this layout.	These L-shaped houses at 6.5m frontages, combine the compactness of the terrace form with the identity of semi-detached houses and incorporate car parking into the plot.	The mews house type, in three or four storeys, can offer live/work units. This kind of suburban mews development can have a strong sense of community.	Five storey flats can achieve a density of 180dph and this higher density can contribute to the quality of suburbia by releasing land for open space and greenery within the overall density of 50dph.

<sup>10</sup> ((undated)). Sustainable Suburbia. A walkable garden suburb. London, MJP Architects. <http://www.sustainable suburbia.co.uk/webpages/Presentation4.html>

## Driving forces: that are 'critical' uncertainties (i.e. what 'happens to us' regardless of what we want)

One of the most important reasons for thinking about the future is to talk about what is most important (impact) and most uncertain. Uncertain issues are the issues that potentially evolving in surprising or unexpected ways.

### Critical Uncertainty N<sup>o</sup>. 1: Social cohesion (fragile vs. resilient)

Family and community and social cohesion<sup>11</sup> are important aspects of Australian life. However, there is no one measure that adequately captures the way that family and community contribute to progress, nor an agreed summary measure of social cohesion (ABS 2010).<sup>12</sup> Social cohesion is a characteristic of a society; while individuals' values and behaviours affect, and are affected by, social cohesion, cohesion itself is not a characteristic of individual members of a society. Scholars agree that there are different degrees of cohesion; societies can be more or less cohesive.

- One recent definition of social cohesion (Bertelsmann Stiftung 2012) refers to the quality of interactions among the members of a community, defined in geographical terms, and is based on resilient social relations, a positive emotional connectedness to the community and a strong focus on the common good (Figure 3).
- Each of these aspects is, in turn, divided into three dimensions: social relationships are measured by the strength of social networks, the degree to which people trust one another and the acceptance of diversity. Connectedness is measured in terms of the strength of people's identification with their country, the degree to which they trust institutions and their perception of fairness. A focus on the common good manifests itself in the level of solidarity and helpfulness, people's willingness to abide by social rules and the extent to which they participate in society.

In Australia, the Sixth '*Mapping Social Cohesion Report*' was released in October 2013. The 2013 survey shows a large decline in the Scanlon-Monash Index (SMI) of Social Cohesion. The SMI measures the five domains of social cohesion; belonging, worth, social justice and equity, participation (political) and acceptance (rejection). The 2013 SMI score (of 88.5) is 5.9 points lower than the 2012 score (94.4) and the lowest on record, as measured against the baseline year of 2007.

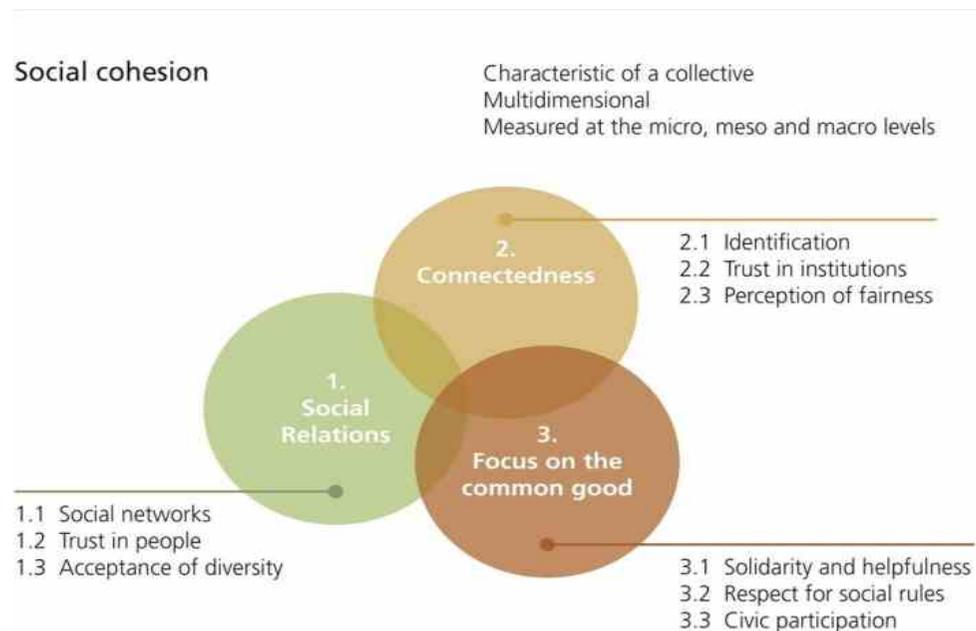
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<sup>11</sup> A review of evidence to support a city scenario project by the London Collaborative (2008) suggested that societal attitudes and community cohesion were particularly hard to predict, but of fundamental importance.

<sup>12</sup> ABS (2010). 1370.0 - Measures of Australia's Progress, 2010. [Family and community and social cohesion](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0-2010-Chapter-Family%20community%20and%20social%20cohesion%20(4.5)). Australian Bureau of Statistics.  
[http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0-2010-Chapter-Family%20community%20and%20social%20cohesion%20\(4.5\)](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0-2010-Chapter-Family%20community%20and%20social%20cohesion%20(4.5))

- Community sentiment in 2013 tended to be supportive of multiculturalism, largely supportive of Australia’s immigration program but negative towards asylum seekers arriving by boat. The 2013 survey also recorded an increase in experiences of discrimination, up to 19 per cent, an increase of seven percentage points in the last 12 months.

Figure 3: the three domains of social cohesion and their dimensions (Bertelsmann Stiftung 2012)



- 33 per cent of respondents in the Scanlon Foundation survey identified economic issues as the most important problem facing Australia, the first ranked issue. The sense of pessimism about the future, which had increased between 2007 and 2012, showed a marginal decline in 2013. In response to the question: ‘In three or four years, do you think that your life in Australia will be improved, remain the same or worse?’, there was a statistically significant increase in the proportion answering ‘a little worse’ or ‘much worse’, from 11 per cent in 2007 to 19 percent in 2012. The 2013 result, 17 per cent, indicated a marginal (but not statistically significant) decline.
- Trust in social institutions is declining. When respondents were asked to indicate ‘confidence or trust’ in nine institutions, the federal parliament ranked second last and political parties last, while hospitals headed the list. Only 27 per cent agreed the government in Canberra could be trusted ‘almost always’ or ‘always’, down from 48 per cent in 2009.

## Factors relating to Australian social cohesion (fragile vs. resilient)

### Resident levels of involvement/interest in the neighbourhood

In the case of the new areas of Belconnen one change that is simply unknowable is the extent of resident's involvement in the local neighbourhood communities.<sup>13</sup> The social science, behavioural economics and similar literature is replete with research that argues we cannot forecast how people might think and act over time. One good example of a relevant research study is by Devinney et al (2013) In '*What Matters to Australians: Our Social, Political, and Economic Values*.'<sup>14</sup> If we think about how people's attitudes might change it is impossible to predict, however we might be able to bookend the change – identify *the worst case and best case outcomes by 2040*. These might be: 'highly active' (best case) and 'rarely' (worst case). To further our understanding we might want to deepen how we define each 'end point'. For example, in the case of the 'rarely', we might explain that participation only occurs when an individual's or household's self-interest is involved.

### Volunteering and donations

In the report '*2081.0 – Australians' journeys through life: Stories from the Australian Census Longitudinal Dataset, 2006 – 2011*' released in December 2013, the Australian Bureau of Statistics reported:

- The volunteering rate remained relatively steady between 2006 and 2011, at around one-fifth of the adult population in both years. However, this apparent stability in the rate disguises the fact that a large number of Australians have moved into and out of volunteering. Just over one-third of Australians who volunteered did so in both 2006 and 2011, one-third volunteered in 2006 but not in 2011 and just under one-third volunteered in 2011 but not 2006.
- In the first quarter of 2013 research by Roy Morgan Research and PayPal noted Australians are giving less to charity but they are increasingly using digital technology to make their donations (ProBono 2013). In 2012, 66 per cent of Australians aged 14+ donated to charity — down from 70 per cent in the year to December 2008. The value of mobile donations in Australia using PayPal has increased by a massive 293 per cent over the past year compared to only 26 per cent growth online.

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<sup>13</sup> A community is often defined spatially through a shared geographic area such as a neighbourhood. Communities can also be the product of shared interest, such as online communities, religious or cultural groups, sports clubs, business, or voluntary groups. The concept of community is fundamental to people's overall quality of life and sense of belonging. Informal networks and how people connect with others are important for strong communities and social cohesion. Confident and connected communities support social and economic development. Strong communities have fewer social problems, are more adaptable in the face of change and when they do experience difficulty they have internal resources to draw upon.

<sup>14</sup> Devinney, T., P. Auger, et al. (2013). *What Matters to Australians: Our Social, Political, and Economic Values*. [A Report from the Anatomy of Civil Societies Research Project](#). Australia Research Council.

- The 'World Giving Index 2013' (December 2013) showed in 2012, Australia, which was the highest-ranked nation in both 2010 and 2012 reports, has dropped to seventh position in the rankings but has retained strong figures for giving.
- A 2013 report from the Anatomy of Civil Societies Research Project 'What Matters to Australians: Our Social, Political, and Economic Values' (Devinney 2013) asked Australians about their donating and volunteering activities across nineteen general categories, from working in their local church or school to being involved in political parties, museums, homeless or healthcare organisations, animal welfare and environmental organisations and other categories of Civil Society Organisations. The report notes 'Overall what we see is that issues impacting people's lives directly matter most, followed by economic issues within society, then social issues in society. After that Australians worry about animals, other global citizens, minorities, and businesses.' It found when it comes to philanthropy salient proximity (organisations that have high touch points in their lives) is important in Australia.<sup>15</sup> There is another pattern of high donating and low volunteering – more people donate to health and medical institutes than any other type of organisation.
- The number of people reporting no religion in Australia has increased substantially over the past hundred years, from one in 250 people to one in five. In 1911 there were 10,000 people (0.4 per cent) who chose the option 'No religion' on their Census form; in 2011 there were just under 4.8 million (22 per cent of Australians). As a single response to the question on religion, only Catholic was higher at 25 per cent of the population, with Anglican third highest at 17 per cent (ABS 2013b).

## Political participation and activism

*We simply don't feel we are getting a parliament with our best interests at heart (Dunlop 2014).*

One of the interesting stories in Australian politics of late has been the formation of new political parties, and their attempt to find traction with the public. Since the 1940s Australia has had a very stable two-party system. However, support for minor parties and independents reached record levels for both the House and Representatives and the Senate at the 2013 election. Support for non-major party candidates reached 21.1 per cent in the House of Representatives, representing more than one in five of all votes. In the Senate, support for non-major party candidates reached 32.2 per cent; just less than one in three of all votes (Green 2013).

Will Australians be pleased with having greater political choice, or frustrated with minority government (supported by minor parties or independents, or a formal coalition like the current Conservative/Liberal-Democrat one in the UK)?

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<sup>15</sup> The gender split of the study population was roughly equal. Differences between the genders in their valuation of the general categories are most marked in the areas of animal welfare and commercial rights; however, these are differences of magnitude rather than order. There is a seven-point gap between the genders on animal welfare and a five-point gap on commercial rights. Men are more interested in issues associated with commerce and ownership, while women are much more concerned about the rights of animals and species. Freedom from discrimination is more salient for women, who rank equality of opportunities higher in equal fourth place. However, overall, the basic ordering of the various general categories of social, economic and political issues are approximately the same.

There has been considerable concern over the past decade or so about the decline in the level of trust in public institutions which has been evident in many long-established democracies. Various explanations for the loss of trust have been advanced, but whatever the causes there is general agreement that low trust is politically, socially and economically damaging. Discontent with the status quo is already apparent among middle classes, digitally connected youth populations, and marginalised groups (for example, ethnic minorities and the new urban poor).<sup>16</sup> Translating this to an Australian context, conventional ('current') wisdom is that the electorate has become more fragmented and the membership of major political parties is in 'permanent' decline. Publicly available statistics to back these beliefs are patchy.

When discussing civic participation the Australian Bureau of Statistics (ABS 2013) says that in both 2006 and 2010, 19 per cent of people aged 18 years and over participated actively in a civic or political group. In 2010, persons aged 55-64 years were most likely to participate actively in a civic or political group (24 per cent), while older persons (aged 75 years and over) and younger persons (aged 18-24 years) were those least likely to participate (17 per cent and 11 per cent respectively). In 1998, voter turnout for the House of Representatives and the Senate was 95 per cent. Twelve years later in 2010, the rate had declined slightly for both houses to 93 per cent and 94 per cent respectively. In the ten years to 2011, the proportion of overseas-born Australian residents (who have lived here for five years or more) who are Australian citizens has continued to rise from 77.5 per cent in 2001, to 80 per cent in 2011.

- In 2013, 91 per cent of eligible Australians were enrolled to vote. This is higher than the proportion three years earlier in 2010 which was 90 per cent. The states and territories with the lowest comparative rates of voter enrolment in 2013 included the Northern Territory (81 per cent) and Queensland (88 per cent), while the Australian Capital Territory (96 per cent) has the highest rate.

Although there is debate about whether political participation is evolving or declining, some interesting work completed for the Australian Electoral Commission says:

- The most common form of activity is signing a petition and young people are more likely have done this in the past year (47 per cent to 35 per cent).
- For boycotting products where young people are 16 percentage points more likely than older people are to have done in the past year (40 per cent versus 24 per cent).
- Far fewer people have attended a demonstration (6 per cent) but again young people are three times as likely as older people are to have attended a demonstration in the past year.<sup>17</sup>

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<sup>16</sup> In a 2013 study of participants in the English riots of August 2011, Treadwell et al argued that the rapid metamorphosis from an initial protest against a perceived injustice to 'aggravated shopping' was historically unique in England. They say that In the UK, even when unrest does occur, our one-in-five are likely to remain more interested in smashing shops than smashing the system. 'These young people are fully incorporated into consumer culture and lack any means of articulating their dissatisfaction or of making political demands for a better future.'

<sup>17</sup> Martin, A. (2013). Political participation among the young in Australia. Australian Electoral Commission Research Symposium 19th and 20th November, 2012. Old Parliament House, Canberra, Australian Electoral Commission.

- Young people are also much more likely to have participated in political activities over the internet (16 to 6) and are much more likely to have visited a politician's or political organisation's website (40 per cent to 13 per cent).<sup>18</sup>
- Because young people seem to be amenable to different types of political participation this creates opportunities for other organizations to mobilize young people in a way not possible before (Martin 2013).

Lucas Walsh (ACYS 2013) cites three key trends in political participation among young people that exemplify young people's lack of engagement in mainstream politics: 1) persistently high levels of under-enrolment; 2) a shift away from party-based politics in favour of issue-based activism (e.g. human rights, racism, the environment), as evidenced by the success of issues-based organisations such as the Australian Youth Climate Coalition and GetUp!; and 3) many young people turning away from democracy as their preferred form of government.<sup>19</sup>

Another emerging possibly relevant generational difference that is being discussed in the literature is that young people look for solutions first among themselves and second in the circle of family and friends. They are willing to invest more in private pension schemes, rely on close personal contacts in case of natural catastrophes, want to do more to prevent food waste and are willing to invest in clean energy sources. What does not appear on their radar screen of solutions is the state or government. They think independently of this basic fall-back system – governments providing a safety net – of the older generation.<sup>20</sup>

## Family structure

The size of households is declining and leading to an increase in the number of households.

An interesting change to watch is 'how family structures evolve.' Most projections suggest that to 2030 the number of one-person households is likely to grow significantly; strong growth is also expected in the numbers of single-parent families and in the number of childless couples. Although uncertain, the change in family and household structures suggest significant challenges in the future. The rising number of households will fuel demand for household goods and services (broadband penetration), housing and infrastructure. In this regard, transportation and affordable housing stand out as the two of the most capital-intensive sectors.

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<sup>18</sup> In the 2013 election the mainstream media (newspapers for example) either oversimplified the issues or became openly partisan. 'This partisanship is in part the result of the financial problems within the media industry, an attempt to consolidate what small market share they have by pandering to the converted. It is probably inevitable.' (Dunlop 2014)

<sup>19</sup> Internet connectivity has already fostered the creation of new global networks of citizens or 'civil society networks,' some of which have challenged corporate and government interests – think about the 'Occupy' Movement, the protests against live cattle exports, GetUp, and 'hactivism.'

<sup>20</sup> Booz & Company (2010). The Rise of Generation C: Implications for the World of 2020. [http://www.booz.com/media/uploads/Rise\\_Of\\_Generation\\_C.pdf](http://www.booz.com/media/uploads/Rise_Of_Generation_C.pdf). PricewaterhouseCoopers (2011). 'Millennials at work: Reshaping the workplace.' <http://www.pwc.com/millennialsatwork>.

The downside should not be ignored. For example the growth in single-parent families, reconstituted households, and co-habiting couples could lead to more of these families facing a higher risk of poverty. The rising number of single-adult households coupled with (ageing trend) more elderly people might mean that the significant proportion of elderly people among Canberra's poor will persist for some years. The increase in childless couples, divorce rates, and step-families may weaken informal family care and – even – family ties.

There is a need to be cautious in making these sorts of conclusions as outcomes are not likely to be straightforward – for instance – labour market participation for the elderly and working mothers might be considerably different in 2040.

## Population size

Australia's future population trajectory is up to us to decide, mainly (given near replacement fertility levels) through the control knob of overseas migration.

Within the lifetime of the typical Australian the number of people living here is expected to jump 60 per cent from 23.3 million today to 37.6 million by 2050. The anticipated population increase over the 2012 to 2050 period has tripled in the last decade alone. In the Australian Bureau of Statistics' (ABS) base-case scenario, known as 'Series B,' we will have to find the room and resources to accommodate 15 million extra residents by the middle of this century. That means we will probably have to build another 7 million additional homes in our cities.

- Analysis of ABS releases shows that from 2003 the base case implied there would be 26.4 million residents by 2050. In 2006 this was increased to 28.1 million. Two years later it increased again to 34 million. In 2013 the projection was that there will be 38 million people here within the lifetime of a 50-year-old.
- The evolution in the ABS's base case has meant we have shifted from a 2003 expectation that involved Australia's population shrinking in the second half of the 21<sup>st</sup> Century to one where it will be more than double its present size by the end of it.

## Critical Uncertainty N<sup>o</sup> 2: Economic vitality (buoyant vs. lethargic)

Scenario writers often choose to centre the discussion on how the economy is faring.<sup>21</sup>

Australians want a future of sustainable self-sufficiency and a healthy environment supporting a robust democracy – free of poverty and inequity according to a projection as part of the 'Australia 2050' project for the Australian Academy of Science. Equally, Australians fear a future in which the stability of day-to-day life has been eroded by a degraded environment, depleted resources, lawlessness or warfare, limited access to health-care and education, extreme (or even increased) economic or political inequity and the fragmentation of social cohesion.

Cities are more than the linear sum of their individual components.<sup>22</sup> For example, economic productivity (e.g. GDP, wages, personal income, etc.) increases on a per capita basis by ~15 per cent with every doubling of a city's population, regardless of a city's initial size (whether from, say, 50,000 to 100,000 or, from 5,000,000 to 10,000,000). Similar increases are shown for everything from innovation rates to incidence of crime and infectious diseases. They get faster with increasing numbers of people, so that larger cities produce and spend wealth faster, create new ideas more frequently and suffer from greater incidence of crime all approximately to the same degree (Bettencourt et al 2010c).

## Factors relating to economic vitality (buoyant vs. lethargic)

### Precarious employment (casualisation)

In his 2011 book *'The Precariat: The New Dangerous Class,'* labour economist Guy Standing says that youth forms the epicentre of the emerging precariat. Following a protracted education process accompanied by massive debt accumulation, young people find that entry points into the jobs for which they are primed for, are scarce or non-existent. The lack of suitable trajectories for a young, well educated population fuels dissatisfaction with the status quo, according to Standing. It arises out of thwarted aspirations for status, upward mobility, and stability through employment. For some, it is incurred by an itinerant and alienated existence. Resentments towards an aged populace with its past advantages and future needs of support may also play a part. The growth in precarious employment and a precariat class, Standing argues, is laying the foundation for social upheaval; expressed in events protests against the World Trade Organisation. 'It may also be part of the ferment of the Occupy movement.'

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<sup>21</sup> The description of the end points of an 'economic' axis can be varied. We can 'frame' this in many different ways for example the end points could be 'battlers and billionaires' and 'egalitarian' or 'vibrant' and 'in the doldrums' or weak and strong

<sup>22</sup> It is important to be cautious of simple quantitative measures like GDP as Bettencourt et al (2010) argue 'How rich, creative or safe can we expect a city to be? How can we establish which cities are the most creative, the most violent, or most effective at generating wealth? The conventional answer is to use the rank order of per capita measures of performance. However, per capita indicators conflate general effects of urbanization, common to all cities as a function of their population size, with local events and dynamics that are specific to particular places. Because it is often the latter that are of most interest for scientific analyses that can inform policy decisions it is important to define a set of urban metrics of local performance that are independent of expectations due solely to population size.'

A number of economists believe that economic growth will no longer generate enough skilled and stable jobs that previous generations took for granted. This jobless growth is a by-product of years of technological advances and globalisation – and in some jurisdictions – labour market regulations that incentivise companies to retain older workers rather than hire new ones. MIT Technology Review’s most widely read business story of 2013, *‘How Technology Is Destroying Jobs,’* looked at the debate over whether technology is automating middle-class white-collar jobs out of existence. If so, we’re headed for a dismal future in which productivity keeps rising but employment doesn’t, creating a new class of have-nots, the ‘technologically unemployed.’

Brian Howe speaking at the National Press Club<sup>23</sup> argues that ‘There is a new divide in the Australian economy. It is not between the blue-collar and white-collar worker, but between those in the ‘core’ of the workforce and those on the ‘periphery.’ Australian statistics show a rise in the number of people employed in insecure work<sup>24</sup> (Wilson 2012). In November 2012, the *‘Forms of Employment Survey (FOES)’* found there were nearly 11.5 million employed persons aged 15 years and over. Of these, 7.3 million (63 per cent) were employees with paid leave entitlements in their main job, that is, they were entitled to paid sick and/or paid holiday leave. Of the remaining employed persons: nearly 2.2 million were employees without paid leave entitlements (19 per cent).

- The business model in many industries (retail and accommodation/food services) is such that casual (and fixed-term contract) workers are an integral part of ongoing workforce arrangements and not just a supplement to a permanent workforce in busy periods. About 43 per cent of casuals in 2011 had been with the same employer for between one and five years, around the same proportion who had been with the same employer for less than one year. The proportion of casuals is also significant in areas where it would be less expected. For example, casuals now make up about 40 per cent of the workforce in universities, according to the National Tertiary Education Union.
- The increased prominence of casuals across diverse industries may help to explain the very high rates of underemployment in the current labour market. As of February 2012, over 900,000 Australian workers had insufficient work (531,500 women and 384,800 men) comprising around 8 per cent of the workforce (in addition to an unemployment rate of around 5 per cent).

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<sup>23</sup> Howe, B. (2012). The consequences of insecure work and some solutions. Address to the National Press Club. Chair of the Independent Inquiry into Insecure work in Australia. Canberra. 18 April 2012.

<sup>24</sup> Work of uncertain duration, lack of access to benefits such as sick leave, paid holidays, low pay (though not always) and an ambiguity as to the legal nature of the employment relationship – is it an employment contract or independent contract, or a fixed term contract or a dependent contract?

## Youth unemployment

According to the June 2013 ABS 'Labour Force Data,' the current full-time unemployment rate (that is, people looking for full-time work) for youth aged 15- to 19-years-old is 27.3 per cent; that is the highest rate for 15 years, when it hit 29.7 per cent in 1998. The lowest level of youth unemployment was in 2008 when it fell to 15.5 per cent.

An important economic concern is that the generation coming of age in the 2010s faces high(er) unemployment and precarious (early career) job situations, hampering their efforts to build a future.<sup>25</sup> There has been a clear increase in youth underemployment and labour force underutilisation linked to both long-term changes to the labour force and recent economic factors, especially the Global Financial Crisis (GFC). Figures released in the 2013 edition of 'How Young People are Faring,' published by the Foundation for Young Australians (FYA), suggest high youth unemployment and underemployment, labour underutilisation and the effects of a continuing casualisation of the labour force.

While early career unemployment spells may be temporary, there is some evidence that these spells may impose enduring disadvantages on the individuals; unemployment at the beginning of the career has a negative effect on the later unemployment chances and duration. These scarring effects seem to fade a little as time goes by, but even a decade after leaving education they still remain quite substantial. However, the extent of the scarring depends on the business cycle at the time of graduation; the negative effects are reduced for those who enter the labour market in times of high unemployment (e.g. Heylen & Leuven 2011).

## Inequality (income disparity)

The overall trend on virtually all measures of resources is towards greater inequality in the last decade. This raises questions about economic growth,<sup>26</sup> living standards, and social stability (Whiteford 2013). As Wilkinson and Pickett argue with compelling evidence in the 2009 book 'Spirit Level: Why More Equal Societies Almost Always Do Better,' countries with high levels of inequality simply do worse than more equal countries.

Changes in family composition and the demographic structure of the population appear to have reinforced trends towards rising inequality, but the effect is much less important than access to employment. According to Australian Bureau of statistics data around 5 million Australians live in low economic resource households.<sup>27</sup> 'The mean income and wealth measures for all persons between 2003-04 and 2011-12 grew more

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<sup>25</sup> In its 2014 *Global Risks Report* the World Economic Forum indicates that 'In advanced economies, the large number of graduates from expensive and outmoded educational systems – graduating with high debts and mismatched skills – points to a need to adapt and integrate professional and academic education. In developing countries, an estimated two-thirds of the youth are not fulfilling their economic potential. The generation of digital natives is full of ambition to improve the world but feels disconnected from traditional politics; their ambition needs to be harnessed if systemic risks are to be addressed.'

<sup>26</sup> Our relatively high wages resulted in a healthy demand for goods and services, which in turn helped grow the overall economy. If the middle class and poor continue to see their incomes decline, will decreased consumption result in lower economic growth in the future?

<sup>27</sup> Australian Bureau of Statistics (2013) *Household Income and Income Distribution 2011-12*

than for people in low economic resource households, resulting in a widening gap between the low economic resource group and the population average.’ Some of the common characteristics of these households include:

- more household members and more members under the age of 18 than the population as a whole
- an over-representation of single parent families with dependent children compared to the population as whole
- considerably lower incomes and wealth than the population as a whole with these households receiving on average 52 per cent of the national average income and 13 per cent of the national average wealth
- a large proportion of renters (68 per cent) compared to the broader population

A United States study scrutinised the chances that a worker today can improve her/his relative position in the economy. For the current generation of workers (born between 1971 and 1986), higher educational attainment, and an economy twice the size of their parents’ has not meant an easier grip on the ladder of opportunity – there is a stasis in income inequality. Among the factors that correlate to low income mobility, the paper finds that geographic disparities hinge on five major barriers: residential segregation, income inequality, primary school quality, social capital, and family stability.

What might be done to engage unemployed and underemployed people? Policy support in this area is an uncertainty. For example, will income support changes be used to lever greater workforce participation? Is additional support to encourage greater participation viewed as an unaffordable cost or an investment in improved employment outcomes? The role of industry needs to be considered, including mechanisms to change employer attitudes and behaviour towards employing – for example – Indigenous people or women with English as a second language.

## Ageing population

The ageing population is more ‘predictable.’ However the number of people available for the workforce is less certain given the influence of migration and government policy. For instance, will people opt out of the workforce to care for baby boomers as they move into the higher dependency stage of life?

Migration is a major determinant of differences in the anticipated rate of growth of the working age population. The balance between permanent and temporary migration is also important, particularly as market-driven temporary migration has increased since the 1990s. Most temporary migrants have been skilled workers but their role in the workforce is not well researched. Emigration from Australia is also a factor, as there has been a steady increase in permanent departures of Australian and overseas born populations (Keating 2011).

Other demographic factors that might be important are: the changing role of women; fertility (the 2002-2008 increase in fertility will influence workforce numbers late in the period from 2011-2025); internal migration; and health factors (for example, obesity may compromise efforts to increase workforce participation).

## Standard of living

Levels of income and wealth are key determinates of individual or family well-being. Economic standard of living involves a complex combination of factors such as income, living costs, and household size and composition. The more prosperous an economy, the better off the residents of that economy are in terms of opportunities to gain a higher income, buy material possessions, and access quality health care. In general, this leads to greater social connectedness, educational advancement, wider employment options, and increased life expectancy.

At the Australian Business Economists' annual conference in November 2013, Dr David Gruen (Treasury Chief Economist) indicated that Australia will be dealing with a world in which living standards are going to grow significantly slower than anything we've seen in our lifetimes. 'Our estimates say that if we achieve productivity growth similar to its long run average, the next decade will see the slowest income growth in Australia for half a century by a lot (Kwek 2013).'

## Cost of living

Deutsche Bank conducted a survey (Sanyal 2013) which showed the cost petrol, technology, cars, and even a Big Mac from McDonald's are more expensive in Australia than other countries.

For the past decade (to 2013) Australia's population has grown an extra 400,000 or so people a year. One consequence of Australia's population boom is higher 'house prices because not enough houses are being built as a result of restrictive planning laws and high construction costs (Kohler 2014).'<sup>28</sup>

## Infrastructure

Key infrastructure systems such as power, water, communications, and sewage waste processing are vital to an effectively functioning city. Cities like Canberra rely upon infrastructure that was designed up to a century ago. Power, water, food, and waste systems are all separate,

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<sup>28</sup> Kohler also says this 'is the reason Australia has not had a recession for 23 years and it's why GDP growth is now around 2.5 per cent. On a per capita basis, Australia's economic growth is among the weakest in the world, and per capita consumption growth is zero. In other words, population growth is the only reason it looks like the economy is growing (Kohler 2014)'. This he asserts disguises a fundamentally weak economy.

and do not take advantage of the natural connections between them. For example, the production of food requires both water and energy. Wastewater can be reprocessed into potable water with plants and sunlight.<sup>29</sup> Integrating energy, water, food and sewage might reduce the per capita energy and water required to produce the same amounts of electrical power and potable water, and also decrease the per capita amount waste.

### Electricity prices

A December 2013 paper, *'Australian Electricity Prices: an International Comparison,'* commissioned by the Energy Users Association of Australia (EUAA) asserts that Australia's electricity prices are very near to the highest in the developed world and seemingly set to reach the highest. The comparison across 91 jurisdictions shows that 2011 (household) electricity prices in four of Australia's eight State/Territories were in the top six of those compared – South Australia ranked third highest, New South Wales fourth, Victoria fifth and Western Australia sixth. If accurate, this means that three-quarters of Australia's population are paying electricity prices that are among the six highest in the developed world.

A Grattan Institute report from December 2013 *'Shock to the system: dealing with falling electricity demand'* analyses the consequences of an extraordinary trend – for the first time in 50 years electricity consumption is falling – and concludes that a big and nasty correction is coming. Because of the structure of the sector in Australia, companies that retail electricity are allowed to increase prices to collect a total approved amount of revenue when demand falls (across remaining customers). In essence greater efficiency is (perversely) leading to higher costs – the less we use, the more we are going to pay (Wood 2013).

### Government capabilities

Canberra revolves around two levels of government and three universities. The three largest employers in town are, in order, the federal government, the territory government, and the Australian National University. This makes the territory highly vulnerable to political change, and cuts to the public service or higher education funding.

The ACT is the least politically represented jurisdiction in Australia – with only two levels of government (the 17-member Legislative Assembly serves as both local and territory-level government) two senators and two lower house members, Canberrans have far fewer elected

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<sup>29</sup> Kohler, A. (2014). Infrastructure deficit puts us on a road to nowhere, ABC, The Drum. <http://www.abc.net.au/news/2014-01-29/kohler-infrastructure-emergency/5224586> .

representatives per capita than any other jurisdiction. [The ACT is the only jurisdiction in Australia without a local government sector with those functions undertaken by the ACT Department of Territory and Municipal Services].

A 2011 report '*Governing the city state: one ACT government - one ACT public service*' by Alan Hawke found 'current arrangements in relation to land and planning are at best hindering, if not actively obstructing achievement of the Government's priorities' (then the major priority areas were sustainability, housing affordability and transport).

In 2013, Canberra was ranked 2nd of 11 Australian cities included in the Property Council of Australia's '*My City liveability*' survey. The survey is one of a number of national and international efforts to measure wellbeing and quality of life in cities using more than simply economic factors. Across the 11 cities, participants rated safety, cost of living, health, employment, and quality of the environment as the most important attributes for liveability.

- The survey showed Canberra's residents were more likely to support, rather than oppose, a series of housing developments to support population growth. The highest level of support was for: new neighbourhoods of freestanding houses built on the outskirts of the city close to jobs; the conversion of old industrial sites to apartments and townhouses; and more medium density housing (like townhouses) in middle and outer suburbs.

### Short-termism

A significant body of social science literature suggests that democracies are systematically biased towards the present.<sup>30</sup> In short, it is argued that elected governments tend to focus on short-term issues at the expense of long-term issues, and typically give more weight to the interests of current voters over those of future generations. This 'present bias' or 'political myopia', shows up as an under-investment in major infrastructure, inadequate protection of biodiversity, an unwillingness to address the long-term fiscal costs of current policy settings (e.g. with respect to retirement income, long-term welfare dependency, student finance, and criminal justice policy), the poor management of natural environment, and inadequate measures to address human-induced climate change.

### Financial stability

An area of great interest is how to finance sub-national governments (including cities) sustainably.<sup>31</sup> In general, the core, and perhaps most important, functions performed by local government are the delivery of essential services (waste, and sometimes water and

<sup>30</sup> An example is Bonfiglioli, A. and G. Gancia (2013). 'Uncertainty, Electoral Incentives and Political Myopia.' *The Economic Journal* 123(568): 373-400.

<sup>31</sup> Comrie, J. (2013). *In Our Hands. Strengthening Local Government Revenue for the 21st Century*, Australian Centre of Excellence for Local Government, University of Technology, Sydney. Working Paper February 2013.

sewerage) and maintaining corresponding infrastructure for local residents (e.g. roads, footpaths, drainage). With only a limited ability to raise their own tax revenues, and to tap capital markets to a limited extent there is problem for investment, particularly in expensive infrastructure, and keeping vital services such as transport going, given that many needed subsidy on a long term basis if they were going to have the necessary mass availability.

### What does being a city state mean?

This is a question that warrants additional reflection. Does the ACT get the best of both worlds – being a city, together with the advantages of being a ‘state’? Do our ‘state’ responsibilities constrain our ability to compete with other cities? And what should trump the agenda when there is a conflict – city or ‘state’ issues?

## Critical Uncertainty N<sup>o</sup>. 3: Concern for the environment (act now vs. act later)

A growing population results in increasing demands for water and energy. These demands are closely inter-related as the production, treatment and movement of water requires energy, and large amounts of water are used to produce energy. (Globally) increasing food scarcity is an issue – growth in food production is slowing at the same time that demand is increasing.

### Declining Australian concern

There is a body of evidence that suggests Australians’ concern for the environment has declined since it reached a zenith in 2007, whether this softening continues into the future has been linked to broader economic circumstances.<sup>32</sup>

Whether a symptom of declining public concern for the environment – or not – it is interesting that in federal politics a number of commentaries say that the Greens have maintained their numbers but lost influence in the Senate. There was a 3.3 per cent nationwide swing

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<sup>32</sup> Devinney, T., P. Auger, et al. (2013). What Matters to Australians: Our Social, Political, and Economic Values. [A Report from the Anatomy of Civil Societies Research Project](#). Australia Research Council. The researchers found: Australians are much more concerned about issues that relate to them and their local community (than elsewhere); people care about issues close to their daily lives. These issues of high concern include food and health, crime and public safety, access to services, equality of opportunity, and individual economic well-being. Issues that seem more distant are lower priority. They also said ‘What is potentially the most critical finding is the degree to which a strongly emotive issue – environmental sustainability – has fallen in the general preferences of Australians. A critical issue of concern in 2007, environmental sustainability – both as a general category and when examined at the specific issue level – is today a middling issue that is neither salient nor not salient.’ In 2007, environmental sustainability was 4th out of 16 issues in terms of level of concern. In 2011, it was 8th out of 16 issues. *[A clear demonstration on how quickly attitudes can change]* ; and there is a pattern of Australians’ involvement in organisations that have *high touch points in their lives*, and in which they can be involved as part of their regular community and family activities – proximity matters.

against the party, whose support has trended downwards (from 11.76 per cent in 2010 to 8.4 per cent in 2013) for the first time since 1996. The Greens national result in Tasmania saw a drop from its 2010 result of 16.82 per cent to a primary vote of just 8.32 per cent in 2013.<sup>33</sup>

Research also indicates that people are most concerned about the social consequences of environmental issues (compared with consequences for themselves or the environment (e.g. Bain 2012)). Bain (2013) found people are more willing to actively support climate change policies when they believe these policies would result in changing people's character, specifically in making people more caring and concerned for others (interpersonal warmth). He found that this is even the case for climate change sceptics, who were more willing to actively support climate change policies when they thought it would contribute to a more moral and caring society (and were also persuaded by potential economic benefits). His conclusion was that incorporating these community-oriented goals into green policies is likely to increase active support in both 'green' and 'less green' sectors of the community, facilitating the transition to a green economy.

In a 2013 study, Anderson et al found that exposure to uncivil blog comments can polarise risk perceptions of nanotechnology along the lines of religiosity and issue support.

## Climate Change

Climate change – is a set of complex phenomena – playing out over an extremely long time frame.

The IPCC defines climate change as 'a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external 'forcings' or to persistent anthropogenic changes in the composition of the atmosphere or in land use' (IPCC, 2007). In September 2013, the United Nations released its latest assessment of climate science. It said that continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. 'Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.'

In a 2013 an analysis by The Washington Post identified another interesting fact about climate change.<sup>34</sup> Since 1991, 'roughly 97 percent of all published scientific papers that take a position on the question agree that humans are warming the planet.' And yet many Australians seem to believe that the scientific community is divided on the cause of global warming. To date, our short-term-oriented political system isn't very good at addressing long-term problems. *If the scientists are right and we need to do something meaningful soon, is it very unlikely that our government(s) would be able to agree on what must be done?*

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<sup>33</sup> 'The dilemma for the Greens is whether to persist in the search for new constituencies or to concentrate on consolidating the emergent partisan base in inner metropolitan electorates' (Miragliotta 2013).

<sup>34</sup> Plumer, B. (2013). Scientists agree on climate change. So why doesn't everyone else? [The Washington Post](http://www.washingtonpost.com/blogs/wonkblog/wp/2013/05/18/scientists-agree-on-climate-change-so-why-doesnt-everyone-else/).  
<http://www.washingtonpost.com/blogs/wonkblog/wp/2013/05/18/scientists-agree-on-climate-change-so-why-doesnt-everyone-else/>

Another interesting research study published in *Nature*, shows that the world's climate will have fundamentally changed by 2050 if we do nothing to slow greenhouse gas emissions. Experts warn of serious disruptions to ecological and social systems, particularly in the tropics and low-income countries. The study compared two scenarios: a business-as-usual scenario with no emissions reductions, and a scenario with moderate emissions reduction. High emissions reductions weren't included because they are currently considered unfeasible. 'If we don't act to reduce emissions, most of the world will experience unprecedented climate change by 2047. If we act to moderately reduce emissions the date is pushed back 20 years to 2069.'<sup>35</sup> Australian cities are likely to see change earlier than the global average, with Sydney to see unprecedented change by 2038. Brisbane and Perth follow in 2042, and Melbourne and Canberra in 2045. So what? When your variability goes so far outside normal variability what you're really doing is increasing the frequency and intensity of extreme climate.

Note an ancillary study on climate change opinion has been prepared for the Belconnen project. This discussed the decline in Australians' interest in climate change – this raises the question: Is climate change a topic that is beyond society's ability to address?

## Water

Water is a widely researched subject. For (exploratory) scenarios we do not need to deeply canvas them. In this section we have summarised a range of conventional views, with a few references to provide a sense of developments and knowledge in this area. We have taken the same approach in the energy section (below).

Drinking water supplies, agriculture, energy production and generation, mining, and industry all require large quantities of water. In the future, these sectors will be competing for increasingly limited freshwater resources, making water supply availability a major economic driver in 2040.

- A UNESCO study (Cosgrove & Cosgrove 2012) investigated drivers of change for water and found ten drivers, which have varying influences and impacts: agriculture, climate change and variability, demography, economy and security, ethics, society and culture (includes questions of equity), governance and institutions (including the right to water), infrastructure, politics, technology, and water resources, including groundwater and etc.
- Globally, an International Food Policy Research Institute (IFPRI) study found that 45 per cent of total GDP (\$63 trillion) will be at risk due to water stress by 2050. That's 1.5 times the size of today's entire global economy.<sup>36</sup>

Since 2008-2009 in the face of the then current 'urban water crisis' most state Australian governments talk about 'waterproofing' their cities.

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<sup>35</sup> Mora, C., A. G. Frazier, et al. (2013). 'The projected timing of climate departure from recent variability.' *Nature* 502(7470): 183-187

<sup>36</sup> Tonassi, S. B. (2011). The world's freshwater supply is in demand - and under threat. Washington, International Food Policy Research Institute.

- The most popular way to do this in 2008/09 was to construct desalination plants, vastly more energy-intensive than treatment and recycling, even though the then dominant suburban form of capital cities created a landscape that lends itself to the relatively economical retrofitting of water tanks (which could provide the washing and garden-watering needs of most suburban households) leaving the central water supply for kitchen and bathroom.<sup>37</sup>

## Energy

Shell continues to update their (widely used) energy scenarios which link back to techniques first developed forty years ago.<sup>38</sup> The 2013 scenarios are:

### Mountains

- The first scenario, labelled 'mountains,' sees a strong role for government and the introduction of firm and far-reaching policy measures. These help to develop more compact cities and transform the global transport network. New policies unlock plentiful natural gas resources – making it the largest global energy source by the 2030s – and accelerate carbon capture and storage technology, supporting a cleaner energy system.

### Oceans

- The second scenario, which we call 'oceans,' describes a more prosperous and volatile world. Energy demand surges, due to strong economic growth. Power is more widely distributed and governments take longer to agree major decisions. Market forces rather than policies shape the energy system: oil and coal remain part of the energy mix but renewable energy also grows. By the 2070s solar becomes the world's largest energy source

There are very many research articles (e.g. Beddington 2008, Wiedenhofer 2013) related to urban energy use. Here are some observations:<sup>39/40</sup>

- Most urban energy use is concentrated in buildings (both homes and offices) and transport.
- The layout of cities has a crucial impact on resource efficiency. Higher density lowers the per capita costs of infrastructure, capital and operating costs, and reduces per capita use of all types of energy.

<sup>37</sup> Gibbs, L. M. (2010). 'Book Review: Troubled Waters: Confronting the Water Crisis in Australia's Cities: Patrick Troy (Ed.), 2008.' *Urban Studies* 47(1): 222-224.

<sup>38</sup> Older sets of scenarios can be downloaded at <http://www.shell.com/global/future-energy/scenarios/previous.html>

<sup>39</sup> Beddington, J. (2008). 'Managing energy in the built environment: Rethinking the system.' *Energy Policy* 36(12): 4299-4300.

<sup>40</sup> Wiedenhofer, D., M. Lenzen, et al. (2013). "Energy requirements of consumption: Urban form, climatic and socio-economic factors, rebounds and their policy implications." *Energy Policy* 63(0): 696-707.

- Per capita energy use in more prosperous cities is comparatively high as a direct result of higher personal incomes, compounded by some urban sprawl and larger homes (larger homes and extensive road networks that encourage car use).
- The energy performance of a city's infrastructure and building fabric is a key determinant of its capacity for resilience. Reducing a city's per capita energy consumption is critical in reducing the impact of shocks or stresses associated with future energy costs (Applegath 2012).

### Buildings

Energy use in buildings is driven mainly by heating/cooling, lighting, and appliances.

- Compact, more efficient housing can reduce energy use to some extent, while regulations governing building design or the retrofitting of old, inefficient buildings can also contribute to a reduction.
- The use of trees, greenery and roof gardens, as well as lighter-coloured surface materials to reflect more sunlight and absorb less heat, can help mitigate the impact of urban heat island effects – a phenomenon in which the city is significantly warmer than surrounding rural areas because of urban design, human activity and waste heat from energy use.

### Transportation

Compact and densely populated cities use less energy per person in transport because people live closer to where they shop, work, and play.

- Residents commute less and, when they do, reliable public transport networks reduce car use. Conversely, transport is more energy-intensive where extensive road networks encourage car use, where public transport is inadequate, or where most people live in the suburbs. Public transport networks make transport energy use more efficient, but city size and congestion can partially offset this efficiency.
- Transit Oriented Development (TOD) is occurring in cities across the world, particularly in Europe and North America. Land within two blocks of transit arteries is zoned for high-density development and retail, with density tapering off the further away one is situated.
- *'Transport Scenarios to 2050'* (WEC 2011) suggest that 'Global transport will remain heavily dependent on fossil fuels with a strong rise in demand for diesel, fuel oil, and jet fuel compared to gasoline. This will have potentially significant implications for refiners and the downstream sector as a whole, especially in Europe, where there is a large emphasis on diesel fuels. The global demand increase for diesel is largely driven by demand from the heavy transport, agriculture, and mining sectors. In these segments replacement of

conventional fuels with new types of fuel technologies is unlikely to occur prior to 2050. The same holds true for fuel oil in shipping and jet fuel for aviation.'

- They also conclude: 'The maximum level of biofuels in the liquids markets is expected to be around four times above current market levels. Water and land use restrictions will prevent much further growth. Biofuels tend to be regional phenomena, mostly concentrated in the Americas, with sugar cane biofuels being dominant in Brazil and corn ethanol being the dominant biofuel in United States. The use of biofuels in Europe is largely a result of government mandates. As for the alternative fuels including natural gas, electricity, and hydrogen, the maximum level is expected to be six to seven times above the current levels depending on the degree of government intervention.'

### Renewable energy

- Different projections for the share of renewable energy abound. Many existing energy companies, especially those with a vested interest in the status quo, project conservative future shares of renewable energy and they emphasise cost hurdles and variability challenges. These companies continue to believe that the future will be dominated by fossil fuels. Projections from these sorts of sources suggest that the share of renewable energy in global energy supply might remain below 20 per cent in the future (not much higher than today). Moderate forecasts (from scenario exercises and the like say renewable energy shares will be in the order of 30–45 per cent by 2050 (electricity, heating/cooling, and transport.) High renewables outlooks projections of 50–95 per cent of energy by 2050 usually are associated with advocacy organisations (but they have also been mooted in recent scenarios of the International Energy Agency (IEA).)
- To get to a point of higher renewables some combination of significant and continued renewable energy cost reductions, along with aggressive and long-term support policies for renewable energy, and major transformations in energy markets and infrastructure are needed. One common attribute of many high-renewables scenarios is a future carbon emissions constraint.

## Critical Uncertainty N<sup>o</sup> 4: Technological deployment/up take (fast vs. slow)

Technological developments are often uncertain yet pervasive.<sup>41</sup> The most interesting technologies to watch are those that might fundamentally change society – affecting the production of goods and services, the organisation of firms/work, and the lifestyles of consumers.

Today information and communication technology (ICT) is affecting a broad range of developments in society at large – this started in the 1960s – but has its impact has really been societal impact kicking in with the introduction of the personal computer and, later on, the Internet. The Internet, big data, and social media should result in more responsive planning, better service delivery, and broader citizen engagement. The growth of the ‘Internet of Things’ – which is already taking place – means that ever more devices are being connected online, touching many more parts of life (and widening the potential for disruption). ‘Connected devices fully disappear into our pockets, clothing, our jewelry, ourselves.’<sup>42</sup>

Opinions about other technologies that bear watching vary. New technologies represent a major uncertainty. Bio and nanotechnology are popular candidates. Most estimates are that the barriers between biology and technology will start to fall within the decade.<sup>43</sup> IBM’s ‘5 in 5 report (2012),’ looks at the technology trends that will change our world in the next five years – this technology is already in development. Basically in five years in five years, we will soon have the ability to touch and actually feel things through our phones. Not only will computers will be able both be able to see images and understand them, they will also understand taste and know what you like to eat; they will have a sense of smell; and they will be able to hear – and filter out the sounds that matter.

- IBM says cities will be ‘sentinent’ i.e. the city will help you live in it. With the rise in smart phone and sensing technologies, analytics and cloud computing, cities will be able to respond quickly, and even predict problems before they occur.
  - More buses will automatically run when there are more people to fill them.
  - Analytical models that allow us to actually change the future and prevent the traffic jam that would have happened if 20 minutes from now if we hadn’t already rerouted lights to stop it.
  - Mobile apps will become the tool for identifying broken street lights, tagging and reporting pot holes, and text messages will alert people in real time when a problem is fixed.

A new multi-author book, called ‘Shift 2020’<sup>44</sup> estimates what technologies will be used in just six years and looks at the future of everything from green-tech and health care to 3-D printing<sup>45</sup> and transport.

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<sup>41</sup> In scenarios one of the most difficult decisions is about the rate of mainstream uptake of some technologies - often that rate as depicted in the narratives may seem somewhat ambitious – the pace of technological development outstrips our expectations.

<sup>42</sup> There is deepening complexity of interactions among the many aspects of life that are dependent on connected devices, making those impacts potentially harder to predict (for example people with pace makers being monitored over the internet). 2020 could see the end of online versus offline.

<sup>43</sup> In 2012 IBM’s Bernard Meyerson forecasted that computers will develop the ability to see, smell, and even hear in 5 years.

<sup>44</sup> DeWaele, R. et al (2013). *shift2020: How Technology Will Impact Our Future*, <http://shift2020.com/>

- Education will become an ‘on-demand service’ where people ‘pull down a module of learning’ when they need it. Large bundles of knowledge, as in traditional courses, will be out. Specific will be in.
- The smart city is close – ubiquitous sensor technology,<sup>46</sup> mesh networks, and big data analytics. For example, technology should redefine transportation to seamlessly marry centrally scheduled buses and trains with more spontaneous options such as car and bike sharing.
- Distributed manufacturing could be bad news for major brands (i.e. what bloggers did to mass media will have its parallel in what amateurs will do to the Sonys and Toyotas of the world.)
- Ubiquitous, open public and private data should make human health and well-being as easily and regularly measured as GDP. A switch in health care from catering to people when they’re ill to more monitoring and prevention means by 2020 more drugs will be personalised (based on people’s DNA) and more training and surgery conducted remotely.

Many *Shift 2020* contributors expect the less desirable effects of technology to become even more troubling by 2020 (the end of privacy, the continued rise of surveillance, dependence on devices). Indeed, Gerd Leonhard, CEO of the Futures Agency says: ‘Machines will know us better than our closest friends and spouses, giving us utterly flawless comments, advice, and recommendations and very accurate personal predictions—in fact running our lives to a very large degree. The backlash will be strong, as well, but for the most part addiction and convenience will prevail.’

Further out on the horizon, a greater coupling of bio-systems and computation will evolve the ‘living city.’ For instance, ‘bacteria will be engineered to target specific materials, like aging concrete.<sup>47</sup> Released into cities, they will replace the old stuff with new bacterial glue that’s structurally sound, networked, and computational. Other bacteria could perform similar maintenance by retrofitting aging utility conduits and faded solar skins. Proto-cell computers could also be released into ecosystems, sensing chemical properties and transmitting them on mesh networks to remote dashboards. Vats of bacteria will pump out fuels, protein resources, and water (Arkenberg 2013).’

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<sup>45</sup> Universe Architecture is collaborating on a Landscape House with Italian robotics engineer Enrico Dini, inventor of an extremely large-format 3D printer that uses sand and a chemical binding agent to create a stone-like material. Dini’s machine, called D-Shape, is the largest 3D printer in the world. Fairs, M. (2013). In the future we might print not only buildings, but entire urban sections. dezeen: <http://www.dezeen.com/2013/05/21/3d-printing-architecture-print-shift/>

<sup>46</sup> The Robobees project at Harvard is exploring micro-scale robotics, wireless sensor arrays, and multi-agent systems to build robotic insects that exhibit the swarming behaviors of bees. They see a future where ‘coordinated agile robotic insects’ are used for agriculture, search and rescue, and (of course) military surveillance. Taking a cue from mound-building termites, the TERMES project is developing a robotic swarm construction system.

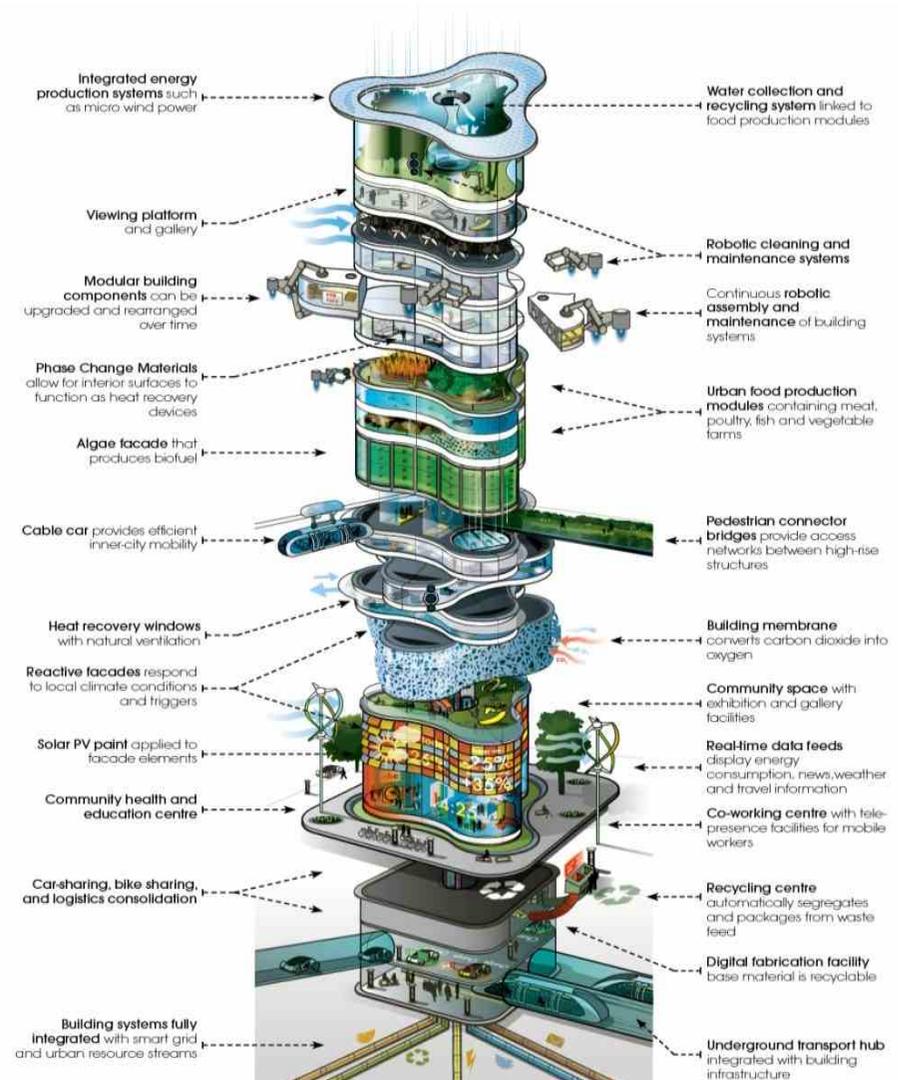
<sup>47</sup> Someday – within the next 15 to 20 years – bacteria could do the cleaning for you (e.g. a dirt-eating carpet). Hacked bacteria, one of the fields of research coming out of the growing field of synthetic biology, could eventually do everything from changing color in the presence of peanuts to alert allergy-sufferers to finding and eating dirt so you don’t have to get out a sponge according to Drexel University’s Design Futures Lab.

## Future buildings

Arup's 2013 'It's Alive' study, undertaken by Arup's Foresight + Innovation team (Hargraves 2013), says that by 2050 structures will be fully integrated into the fabric of the city, responsive to changes in the external environment, and designed for continuous adaptability, according to real-time needs and demands of its users. The specific technology that Arup predicts will make up our buildings varies from the likely (or even current) to the speculative, the specific to the vague. It imagines future buildings to include features such as photovoltaic surfaces and algae producing bio-fuel pods – that can theoretically enable buildings to produce food, energy, and resources. [Arup shares (or perhaps borrows) the OECD's troubling forecast of a warming, overpopulated Earth hungry for, yet deficient in, essential resources.]

The mock-up of the building of the future (Figure 4) by ARUP has its own energy systems ('micro-wind,' 'solar PV paint,' and 'algae facade' for producing biofuels). There is an integrated layer for meat, poultry, fish, and vegetable farming; a 'building membrane' to convert CO2 to oxygen; heat recovery surfaces; materials that phase change and repair themselves; seamless integration with the rest of the city; and much else. Arup points to five main attributes: flexibility, sustainability, reactivity, community integration, and smart systems (including automated recycling). The building has a 'dynamic network of feedback loops characterized by smart materials, sensors, data exchange, and automated systems that merge together, virtually functioning as

Figure 4: Arup's 2050 building



a synthetic and highly sensitive nervous system,' it says.

- Arup also says that structures will be completely modular, designed to be shifted about (using robots). The building has three layer types, with different life-spans: a permanent layer at the bottom, a 10- to 20-year layer (which includes the facade and primary fit-out walls, finishes, or on-floor mechanical plant). And, a third layer that can incorporate rapid changes, such as new IT equipment.

## Different technological advances favour cities of different sizes

New technologies affect whether cities shrink or expand. Research from the Netherlands Bureau for Economic Policy Analysis has found that different sizes of city are advantaged by different technologies. Their research found 'Large cities will be successful in the next thirty years if a new general-purpose technology (such as bio- or nanotechnology) will develop and intensive collaboration between researchers, designers, producers, and professionals is essential. However, the reverse might also happen. Small cities with strong global ties are attractive if further developments of ICT dominate technological advancement. In that case geographical proximity will become less relevant and production processes depending less on human interactions will move away from expensive locations.'<sup>48</sup>

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<sup>48</sup> A McKinsey study (Dobbs et al 2011) concludes 577 middleweights – cities with populations of between 150,000 and 10 million are seen contributing more than half of global growth to 2025, gaining share from today's megacities. Canberra is ranked 23 of the Top 25 hot spots by 2025 in their Cityscope 2025 city rankings. They indicate that expanding populations are not the largest drivers of urban growth. 'In most cities, rising per capita GDP is the major factor, fuelled by agglomeration benefits in larger cities and their capacity to attract higher investments and talented workers.'

## Scenario 'logic' & the stories: translating research and imagination into different views about the future

To create the scenario set generally two or three scenario parameters (i.e. the critical uncertainties) are chosen because they are comparatively independent as variables, outside of the control of any one organisation (including any one public body) or individual, and a powerful driver of change in other areas. When these two or three critical uncertainties are combined into a 'cube' (Figure 5) or a matrix/table between four and eight highly divergent and rich exploratory scenarios emerge (Table 2). These two or three uncertainties help to organise and distinguish the four scenario narratives, but each story explores the dynamics of change associated with a richer set of critical uncertainties that have been identified. Using different dimensions create different sets of scenarios and catalyse much different conversations. We have chosen three critical uncertainties – one economic, one social, and one attitudinal (about the environment).

The uncertainties we have used are:

- **Economic vitality<sup>49</sup>** is defined as:
  - *the degree to which the economy is sustainably competitive (i.e. it can attract and retain economic activities that: create and fairly distribute wealth, and that contribute to improved standards/quality<sup>50</sup> of living for all citizens.)*
- **Environmental concern<sup>51</sup>** is defined as:
  - *the degree to which the community is willing to act in the face of observed (measured) changes in the natural environment*

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<sup>49</sup> The *European Metropolitan Network Institute* defines economic vitality as: 'The economic competitiveness and the economic vitality of a city are often used interchangeably. An urban economy is considered as 'vital' when it is able to compete with other cities and regions in a sustainable way. A competitive region is a region that is able 'to attract and maintain firms with stable or rising market shares and the distribution of that wealth and creation of higher standards of living for all citizens.' According to Porter, governments must, first and foremost, strive to create an environment that supports rising productivity. A nation's standard of living is determined by the productivity of its economy, which is measured by the value of its goods and services produced per unit of the nation's human capital and natural resources. In short, an economic vital city is a city that is able to compete with other cities in term of productivity and in terms of sustainability and quality of life (Pen et al 2012).'

<sup>50</sup> Quality of life is crucial and relates to *soft location factors* which are becoming increasingly important in differentiating one city from another. It determines the attractiveness of metropolitan areas and consequently the urban and regional economic structure (good environment, distinctive architecture, cultural facilities, a diverse housing stock, and access to natural amenities).

<sup>51</sup> This driving force relates to a major challenge to sustainable decision-making – that is 'short-termism' – this occurs when society maintains its focus on the most immediate, visible, short-term needs. It is easy to name a few of the impediments to taking a longer view and/or taking corrective action: pressure for action coming from opposition leaders, lobbies and 24-hour media and politicians wanting to show tangible quick results on issues in view of an upcoming election. Issues that can seem critical to political survival (and thus put at the forefront for discussion) are not necessarily those that are objectively the most important.

- **Social cohesion** is defined as:
  - *the quality of interactions among the members of a community, defined in geographical terms, and is based on resilient social relations, a positive emotional connectedness to the community, and a strong focus on the common good*

In addition to the key uncertainties, Table 2 also shows other projections relating to the future of Canberra and Belconnen. How they come together is quite important.

The scenario ‘matrix’ (Table 2) although only a skeletal outline of different future worlds, suggests that governments and communities will have to deal with inordinately complex and inter-related problems, many of them defying simple or immediate solutions. It is interesting to note that some of the *implied* situations may be ‘unmanageable’, in the sense that governments will lack either the resources to cope, or the capacity to intervene with any degree of effectiveness, and local communities will be left to fend for themselves for extended periods of time.

Finally, in looking at matrix (and reading the scenario stories) it is important to recognise what the scenarios have in common and where they differ (i.e. some messages seem to be essentially the same whatever the scenario.) For example is it safe to assume that:

- the economic growth of China and India is likely to be one of the most important global economic development for Australia’s economy (industrial structure) over the next 15 years – to 2030
- manufacturing, tourism and education industries could all suffer<sup>52</sup>
- the numbers of suitably qualified people for work in the aged-care sector must be grown (this is a major issue for government)

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<sup>52</sup> An area of uncertainty in the future is whether gender roles will become less delineated with men taking on more domestic responsibilities and/or moving into traditionally female jobs (as manufacturing work declines and service jobs grow – one possibility). Will men with poor education be left behind in the labour market?

Figure 5: A scenario set for West Belconnen – the ‘future’ space – all of these worlds are plausible. All of them could happen. Are you prepared?

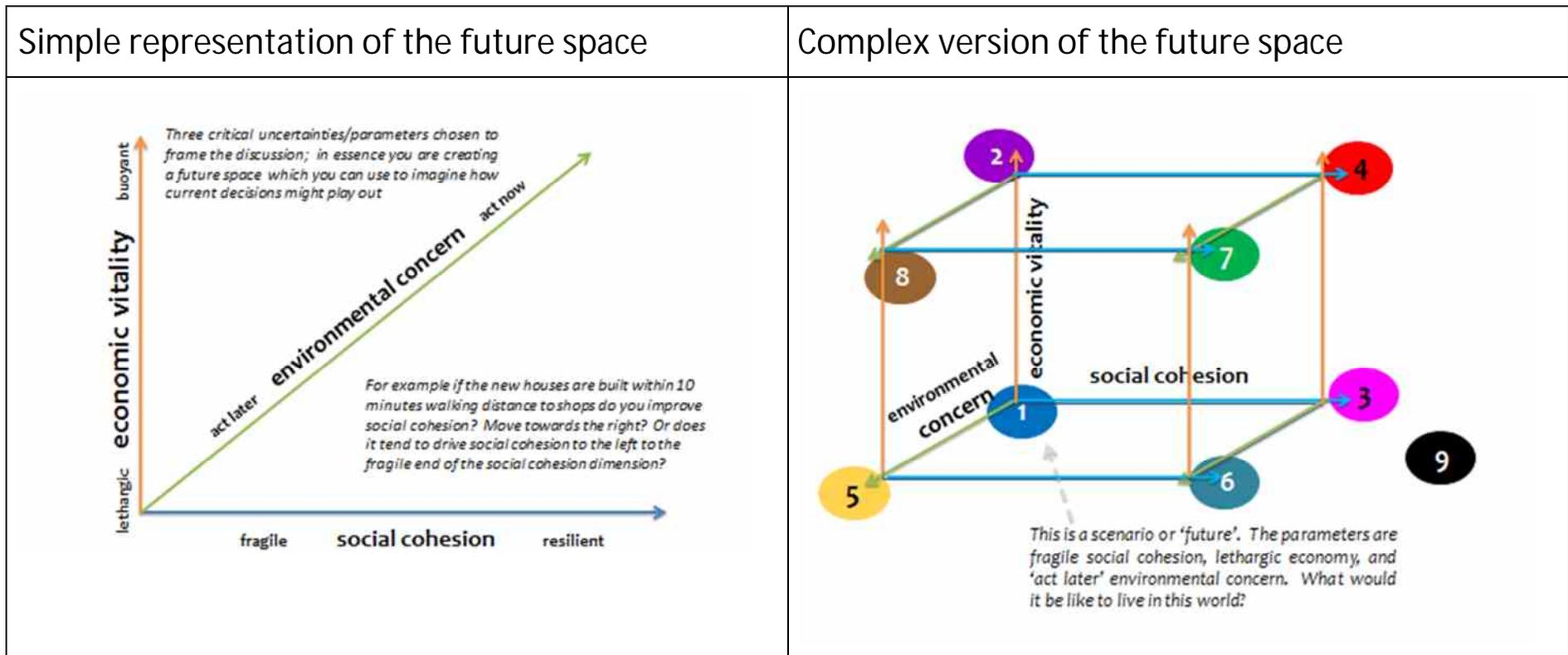


Table 2: Comparing the parameters of eight possible scenarios (in Figure 5)

	Scenario 1 (dark blue) <i>The 'unlucky country'</i>	Scenario 2 (purple) <i>Inequity grows apace – 'battlers and billionaires'</i>	Scenario 3 (pink) <i>Let's just make the best of it for 'now'</i>	Scenario 4 (red) <i>We're clever, we can fix this later</i>	Scenario 5 (gold) <i>We should have seen this coming</i>	Scenario 6 (green) <i>The lucky country indeed!</i>	Scenario 7 (teal) <i>It's hard to be green</i>	Scenario 8 (brown) <i>Environmental clans doing what they want</i>
What if ...	<i>anything that can go wrong</i>	<i>we leave the battlers behind</i>	<i>we can only rely on family and friends</i>	<i>the rate of innovation looks set to skyrocket</i>	<i>well-being trumps wealth</i>	<i>everything falls into place</i>	<i>the natural environment reaches a tipping point</i>	
Economic vitality	<i>lethargic</i>	<i>buoyant</i>	<i>lethargic</i>	<i>buoyant</i>	<i>lethargic</i>	<i>buoyant</i>	<i>lethargic</i>	<i>buoyant</i>
Social cohesion	<i>fragile</i>	<i>fragile</i>	<i>resilient</i>	<i>resilient</i>	<i>fragile</i>	<i>resilient</i>	<i>resilient</i>	<i>fragile</i>
Environmental concern	<i>act later</i>	<i>act later</i>	<i>act later</i>	<i>act later</i>	<i>act now</i>	<i>act now</i>	<i>act now</i>	<i>act now</i>
Population <sup>53</sup> (average 724,805)	<i>higher</i>			<i>average</i>		<i>higher</i>		
People per dwelling <sup>54</sup> (falling to 2.49)	<i>higher</i>			<i>average</i>		<i>less</i>		
Other critical uncertainties <sup>55</sup>	<i>To be described in the narrative</i>			<i>To be described in the narrative</i>		<i>To be described in the narrative</i>		
How achievable is the vision?	<i>To be described in the narrative</i>			<i>To be described in the narrative</i>		<i>To be described in the narrative</i>		

<sup>53</sup> Richard Hu projections for ACT & surrounding region population in 2041

<sup>54</sup> Richard Hu projections for average number of people per dwelling by 2041

<sup>55</sup> They must make sense in terms of the three key parameters (economic vitality, social cohesion and environmental concern)

## Developing a narrative (an example)

The narrative that is developed for each of the scenarios in a scenario set requires imagination – narrators need to imagine what it is like to live in 2040 in the future. The purpose of the narrative is to add detail and colour to our basic understanding of each scenario. Constructing a detailed narrative requires us to weave together changes we can reliably project, with speculations about less reliable ‘change drivers’. This requires judgment and intuition to analyse shifts in the environment, to produce new perspectives and insights, and to identify catalysts for action. Basically ask and answer three questions:

- What is 2040 like?
- How did we get there?
- To what extent has the Belconnen Project vision been achieved?

While some elements of the stories may seem unrealistic to you especially at first glance, please consider that the descriptions are about Canberra and Belconnen up to 30 years into the future.

- Take a moment to think back thirty years – to about 1985 – and consider the range of rapid and surprising developments for example – Facebook and Twitter did not exist, and the Global Financial Crisis and the spread of complex terrorism (resulting in incidents like the Bali bombings) would have been hard to imagine, the ‘turning point’ discovery of a chemical that will (eventually) allow for treatment of Alzheimer’s disease. Now 3 years – think back to 2011 - in 2011 we saw a series of remarkable events – the mass mobilisation of people in the form of the Arab Spring and Occupy Wall Street movements, the Euro was in crisis, and riots rocked London. Which events will be, in the grand scheme of things, looked upon as mere ripples leading up to a substantial change in the way we live and work?

When writing scenario narratives, it is important to try to not get hung up on any single, individual event as a change catalyst, rather try to identify areas of vulnerability. It’s like looking at an old bridge (that is fragile). One can’t predict which truck is going to break it, so you have to look at it more in a structural way – to study the evolution of the terrain itself. It’s not about trying to predict which truck is going to break that bridge. But you look at bridges and say, ‘this bridge doesn’t have a great foundation. This other one does. And this one needs to be reinforced.’

- For instance, many people knew that the Middle East was very vulnerable to turmoil (because of the demographics, a very young population, widespread unemployment, the dissatisfaction with the distribution of income and with governments) but knowing how it would unfold and knowing that somebody setting themselves on fire in a market in Tunisia would lead to widespread discontent (in Egypt) was unpredictable (and we still don’t know how it will end.)

## Lethargic economy stories

These four scenario stories demonstrate different reasons for collapse (Table 3). The literature makes clear that the causes and timings of collapses are not easy to explain systematically. Several ‘classic books’ have suggested reasons – for example: Jared Diamond (1997, 2005) sees environmental factors as key; Joseph Tainter (2004) highlights the progressively increasing inefficiencies of growing complexity in civilisations; Ronald Wright (2004) emphasises quasi-cyclical processes in which the seeds of collapse are sown in bursts of growth as societies fail to take a long view. These and more recent works suggest while the details of history never repeat themselves, the patterns of history do with regularity. The circumstances only seem new because they arrive in different wrappers. But – they are arguing – the same human character repeats the same behaviour, creating the same problems and stresses that we respond to in familiar ways.

Table 3: Comparing across the scenarios where the economy is less favourable than that of 2014, this chart only shows the direction of change (a tendency).

	Why?	So what?				
		electricity costs	water costs	access to ICT (costs)	education costs	mortgage stress
Scenario 1	Global economic conditions					
Scenario 3	Chinese economic collapse in 2020					
Scenario 5	Populist politics					
Scenario 7	Climate variability					
	The red arrows in this table indicates that we are worse off – for instance prices have risen, or the situation has worsened since 2014. No arrow in the chart indicates that the direction of change is not clear.					

### Scenario 1 (blue) lethargic, fragile, act later

So what? *New forms of home ownership/occupancy, rental properties in demand, public housing shortage*

Scenario 1 assumes a confluence of downside circumstances. This is a world where, no matter what we decide and do, we end up on the wrong side of the future. Australia is a very small country<sup>56</sup> with a very open economy. These facts are sometimes easy to forget. No matter what our politicians say during election campaigns, the fate of the Australian economy – the big ups and downs – have been determined by global conditions, not domestic ones. But, we have contributed to our problems – our compass points in exactly the wrong direction. The economy has ‘tanked’, yet we are still addicted to growth (governments) and wealth (individuals). No action is taken by governments unless you have shown it to be ‘uneconomic.’ Even if there is willingness among people for change, they often fail to succeed in lifestyle changes because they are confronted with factors that lock-in their unsustainable behaviour and choices. For example, progress on climate change was almost constantly (stalled over several decades) by warnings of harm to economic growth – it will ‘kill jobs’ – even though climate change was already pummelling regional economies. What remains salvageable of our natural environment – that provides us with food, energy, and water – is now collapsing. Polls show Australians are bitter about the long queues for housing and hospitals,<sup>57</sup> as well as growing fury at surging food prices, power cuts, and water shortages. Tax avoidance is widespread. Thousands of people are working in the *shadow economy* i.e. working ‘off the books’ for legal businesses or raking in tradable ‘Net-tokens’ with illegal ones (‘cash’ vanished in 2025). The size of this grey zone is elusive but it is thought to be between 8 to 16 percent. This is only part of a wider story of rising crime in an increasingly fragmented, fractious, and alienated society.

### Scenario 3 (pink) lethargic, resilient, act later

So what? *New forms of home ownership/occupation, public housing shortage, need for flexible use public/community buildings, fewer schools*

In 2040 we’ve hunkered down.<sup>58</sup> We can still feed ourselves (community gardens), count on a roof over our head (community temporary houses), and educate our children (online learning). Our economy has never really re-covered from the Chinese collapse of the 2020s. Australia failed to bolster its capacity to compete into the future – for far too long we were blinded by a relatively strong economic performance. With private sector hiring patchy and state and federal budgets under pressure, no job is truly secure. In 2040 the only thing that keeps us going is each other. With little relief in sight, governments are stymied by what to do about the large, unaffordable welfare system. However, community spirit, mateship, and ‘giving a hand to those doing it tough’ are resurgent values throughout the country. Even though it is more common and longer lasting the prospect of being unemployed is not so terrifying. Belco-Micro is growing rapidly – it’s a local company that finds ‘micro-work’ opportunities for the under- and

<sup>56</sup> Overseas there are cities with more people than our entire country.

<sup>57</sup> Government is facing down a health ‘disaster’ – the long-term results of *Big Food* addicting us to fat and sugar and *Big Pharma* helping us to escape our real personalities and our personal realities. (Life expectancy is far more than what the government actually expected). However, if you can afford private care, it’s possible that biomedical advances will extend wellness and shorten decline and disability for people as they age.

<sup>58</sup> Defined in the *Online Slang Dictionary* as: ‘To dig in or crouch for the purpose of waiting out or avoiding an undesirable event or situation.’

unemployed.<sup>59</sup> We make do. But that is not so bad – open-air food markets are more than just a place to buy the week’s groceries. They serve as a hub of activity and a way to invest in one’s community – and as a place for bartering for ‘neigh-coins’ – the electronic currency that lets you purchase professional services locally. Political participation takes place at the local level and new methods of direct decision-making are introduced. Charity begins at home, so there is little interest in fixing the ‘climate’ or ‘African hunger’ or other long-standing seemingly intractable problems beyond our borders.

### Scenario 5 (gold) lethargic, fragile, act now

So what? *Higher density, rental properties in demand, public housing shortage*

Lucky country complacency has been Australia’s Achilles heel. Australia is finally come to terms with living in an increasingly divided place. For some years there has been a sense that our governments are failing to provide for the basic needs of a substantial share of the country’s population. A succession of Australian governments (and our largest companies) is rendered purposeless by ‘short-termism’ – they lurch from fashion to fad – thinking only about visible, short-term needs. The complexity of issues (like ageing, immigration, and a weak economy) has contributed to political parties adopting a rag-bag of populist policies. Energy, water, and climate change policy is chaotic and incoherent, with each lurch breeding a pile of taxpayer cash and a carnival of lobbyists out to grab it. Politicians are good at presenting Australians with stark choices such as ‘you can have more jobs or you can look after the environment,’ but their solutions just don’t work. This has caused public trust in the political process to chip away – diminishing every year. We all know that the future will not take care of itself as we worry about the present. It is easy see the impediments to taking a longer view and/or taking corrective action: pressure for action comes from opposition leaders, special interest lobbies, and 24-hour media and politicians wanting to show tangible quick results on issues in view of an upcoming election. Australia’s fragmented media landscape has deteriorated to a point where the majority of sources of our news are operating with an agenda.<sup>60</sup> There are few reliable information sources, people are misinformed on a range of issues, and bad media can do ample harm (people only read what supports our existing beliefs). Issues that can seem critical to political survival (and thus put on the agenda) are not necessarily those that are objectively the most important.

### Scenario 7 (teal) lethargic, resilient, act now

So what? *Share houses (ownership/occupancy), high demand for rental properties, stranded assets (property) in the regions, more public housing*

In 2040 heightened climate variability (and extreme weather events) has severely affected the economy. The constant ‘reign of natural disasters’ has – not yet – tapped out our willingness to help our neighbours. Many regional or small town households, weighed down by the costs associated with

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<sup>59</sup> Microwork is a series of small tasks which together comprise a large unified project, and are completed by many people over the Internet.

<sup>60</sup> There is general agreement that there is a trend towards ‘audience fragmentation’ – and that commercial pressures will likely result in a continued fractionation of media offerings into cyber- or cable-ghettos that satisfy the needs of one — and only one — demographic segment of the population (e.g. Nelson-Field 2011) as it is better and cheaper for advertisers.

rebuilding after disaster, find it's often easier to move to 'the city' even with its reduced prospects for employment. Some areas of the abandoned countryside are re-wilding and/or going feral. Being broke has channelled innovation and inventiveness at many levels. The rapid decline of public welfare has forced people to start looking after themselves. At any given time, an individual is active in at least five or six different co-operatives that are involved in hobbies, food, 'community pets' and elderly care. And, the benefits of interacting with nature are widely recognised.<sup>61</sup> The share economy has boomed (e.g. most neighbourhoods have an automatically controlled car pool with self-driving vehicles, retrievable by an iPhone app) – individual ownership is passé. Australian citizens are tired of self-serving, temporising state and national governments that have delivered few benefits to communities in need. Local governments have earned constitutional recognition (granted in 2030), because of their unflinching efforts to help local communities.<sup>62</sup> And, 'civicism' takes root.<sup>63</sup>

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<sup>61</sup> Keniger, L., K. Gaston, et al. (2013). 'What are the Benefits of Interacting with Nature?' *International Journal of Environmental Research and Public Health* 10(3): 913-935.

<sup>62</sup> In 2040, Canberra, for instance, has a good record of building innovative high density public housing to meet the growing demand for public housing. The developments routinely incorporate community gardens, waste water recycling, and vertical farms to partly offset reduced welfare payments.

<sup>63</sup> In their 2011 book *The Spirit of Cities*, Daniel Bell and Avner de-Shalit argue for a post-national ideology of civicism whereby one's loyalty to the city surpasses that to the nation, creating a new level of identity and agency beyond national citizenship. Bell and de-Shalit look at nine modern cities and the prevailing ethos that distinguishes each one. The cities are Jerusalem (religion), Montreal (language), Singapore (nation building), Hong Kong (materialism), Beijing (political power), Oxford (learning), Berlin (tolerance and intolerance), Paris (romance), and New York (ambition). Bell and de-Shalit draw upon the richly varied histories of each city, as well as novels, poems, biographies, tourist guides, architectural landmarks, and the authors' own personal reflections and insights. They show how the ethos of each city is expressed in political, cultural, and economic life, and also how pride in a city's ethos can oppose the homogenizing tendencies of globalization and curb the excesses of nationalism.

## Buoyant economy stories

These four stories dive into the implications of economic growth. Table 4 summarises some of the consequences.

Table 4: Comparing across the scenarios where the economy grows over time, this chart only shows the direction of change (a tendency)

	Why?	So what?				
		electricity costs	water costs	access to ICT (costs)	education costs	mortgage stress
Scenario 2	Business growth (only)					
Scenario 4	Technology has delivered benefits					
Scenario 6	Innovation & the growth of China					
Scenario 8	Resource efficiency and exports					
	A green arrow in this table indicates there has been an improvement in the area since 2014. No arrow in the chart indicates that the direction of change is not clear.					

Scenario 2 (purple) buoyant, fragile, act later

So what? *High demand for rental properties, more public housing*

Another global recession in the early 2020s hit Australia hard. The so-called recovery was 'jobless.'<sup>64</sup> Australia has evolved into a country of 'small government – big business,' where we leave the 'market to sort itself out.' As China is (still) linked closely to us, rapid urbanisation in China (leading to an increase in demand) has continued to benefit Australia's economy in the resource, retail, education, and business sectors. But the benefits have not been distributed. The environment is not high on the agenda. Perhaps the single biggest barrier to action on environmental issues is the fact that it doesn't hit us in the gut – it's got no emotional heat for most of us. A handful of rich people in an expensive but walkable urban oasis is not a sustainable future. The rich and the poor very rarely meet and therefore understand little about each other. Wealthy citizens see themselves as 'makers' and the poor as 'takers,' while the poor see the rich as selfish. In 2040 there are actually two economies – one of 'battlers' and one of 'billionaires.' The wealthy are doing quite nicely (stock options and financial assets) – for them the economy is roaring. But for the rest of us the economy is depressed and depressing.<sup>65</sup> The chances that your daughter or son can move up the ladder of success are greatly diminished. Nowhere is this more apparent than in our health outcomes – life expectancy has fallen. 'Wage theft' – being paid less than the minimum wage or denied overtime pay – is rampant. Weak penalties for violating laws have given large corporations the sense they can operate with impunity. The growing view that the extreme pursuit of money (and what it can buy) has made us *worse people* -- less connected to family and friends, less empathetic and caring, ruder and less patient, and more focused on instant gratification – has been slowly gathering steam at last. With more frequent protests, virtual and real, and a divided citizenship, is our political system about to throw up a new type of radicalised politics?

Scenario 4 (red) buoyant, resilient, act later

So what? *More intelligent buildings ('living' buildings), fewer solely commercial premises*

Getting to 2040 has been a game of snakes and ladders. Technology has *finally* changed the way we work, live, and play. We trust only a few others – deeply – and are heavily reliant on our personal networks<sup>66</sup> to help us make our way in this decentralised, complex world. Consumerism is at an extreme. We define our identity through what we own. Most structures are 'living buildings' whose intelligent systems adjust to the needs of inhabitants, respond automatically to variations in weather, and produce more resources than they consume. Autonomous robots and artificial entities outnumber people in every home. If you can afford it, anything you want is now being delivered at home (food, books, cars), or made by the

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<sup>64</sup> A jobless recovery is a situation where after experiencing recession, the economy starts growing again (i.e. recovering), while unemployment levels remain constant or continue to rise i.e. the unemployment rate takes several years or more to recover to pre-recession levels.

<sup>65</sup> Salaries paid to employees are a boon to consumption, benefiting the economy broadly. But if the jobs and salaries are sent abroad and profit is increased, share value may be higher but consumption suffers. GDP may increase, but the wealthy, whose incomes are closely tied to the value of financial assets, are disproportionately benefited.

<sup>66</sup> Many Australians have diversified their intake of information in the past three decades, relying less on a few major networks and top newspapers, and yet the ABC (commercialised) has still been hugely influential.

stay-at-home parent/entrepreneur next door (e.g. local bespoke '3D' tailors print clothing). Generally, the economy is made up of far more small and micro-businesses specialising in 'open design, open hardware, and open products'. Your home network informs you about local activities and is linked to the transport system and neighbourhood health centre, which receive data. You are constantly being monitored (what you email, where you shop, how you shop, what you say, where you drive, what you read.) Financial pressures and the associated status anxieties are rampant – *digital-free* 'black box' modules are becoming popular (when you want to be 'off the grid' entirely). Family holidays are a rarity – kids today find enough exciting things to discover through virtual tourism services and augmented reality games. Our politicians pretend they can steer the economy like a ship. But we have a very small ship and it's a very big ocean. From a public perspective we have 'wised up' – government is not that important – people generally do what they want – held in check only by their virtual and real communities – and then pay the fines to government for so doing.

### Scenario 6 (green) buoyant, resilient, act now

So what? *Disaster responsive buildings/infrastructure*

Luck is on our side. A series of good decisions, good fortune, and happenstance lead us to a very different sustainable world – although the journey there was not without pain. These changes would not have happened without: a strong economy, policy and governance shifts, social innovation, and individual behaviour change. We have survived a series of disasters – flood, droughts, bushfires, and a major pandemic in 2017. Public interest in water issues has only grown over the years with the rise of 'extreme water' (i.e. water that is either too much or too little). Governments across the country imposed post disaster levies, to the point of public outrage – until this opened the door for broader tax and economic reform.<sup>67</sup> Keystones in Australia's recovery process from the early series of disasters included moves to structurally shift the economy – towards goods and services that are sustainable – and that are attractive to Asia's middle class consumer.<sup>68</sup> This succeeded beyond our expectations. In 2040, our current economic strength is not just a China story, our steadfast pursuit of innovation has paid off too. In Canberra, high tech business clusters benefit greatly from drawing on the cities' knowledge-intensive environments and the highly educated population. Of course it is largely a China story, after all 'a child born in 2017 will spend their entire working lives with China as the world's biggest economy.'

### Scenario 8 (brown) buoyant, fragile, act now

So what? *Green 'built' environment, higher density housing*

Population growth, ageing, and retirement patterns have caused a fundamental shift in the way we live – mainly because we could not afford to stay the same. By 2020 Australians were well aware of the fact that the task of building the new roads, houses, schools, supermarkets and recreation

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<sup>67</sup> An often reported fact on the Australian tax system is that of the more than 100 state and federal taxes in Australia, only 10 collect more than 90 per cent of government revenue. The obvious question then becomes, what is the cost of collecting this revenue and is there a better way? Logic suggests that this system is not efficient, effective, or sustainable.

<sup>68</sup> Estimates vary but in about 15 years (from 2014) Asia will have 3.2 billion middle class consumers. The Australian market will be less than 1% of the Asian middle class consumer market.

facilities needed by 2050 was so great that the unless something gave we would have struggled to cover it, even with the help of foreign capital. In the 2020s and 2030s Australia consciously based its economy on providing solutions to global challenges (based on our experience dealing with our own domestic challenges). Major disruptive and disliked (at least in some quarters) lifestyle changes have happened. These range from a dramatic increase in housing density and an end to our reliance on the car, to the creation of self-sustaining urban communities capable of generating their own energy (to avoid the need for new power stations). Success isn't evenly spread as environmental clans (with different agendas) have greater reach in some cities. By 2030 most cities, Canberra included, are reporting on measures of well-being.<sup>69</sup> GDP per capita is not relevant – today – in 2040 – more adequate indicators for tracking 'progress' relate to our health, happiness, and ecological footprint. By 2040 we are highly resource-efficient and this is an important source of global competitive advantage. While the market is crowded (for example, other countries are also concentrating on 'green' technology Germany, Korea, China) – the market is still growing as larger economies (like China and India) are only just seriously working on their environmental challenges. Exports of our knowledge and technology are creating much needed revenue for the Australian welfare model.

## Three exploratory stories in brief

We developed eight scenarios (as already reported) using three key drivers of change – the drivers of change were economic vitality, social cohesion, and environmental concern. Of the eight scenarios three were more fully developed for this project:

A '**Perfect storm**' – the first scenario – reflects a future where Australian governments, businesses, and communities respond ineffectively to poor global economic circumstances over which we have no control. We are poorly positioned and ill-prepared for the future.

The second scenario – '**Snakes and Ladders**' – allows us to explore a world of high technology that is 'clannish,' a level of distrust between groups and in governments has weakened the social fabric.

In '**Return to Burley-Griffin**' – the future is not perfect – but Australians generally, and Canberrans in particular, are definitely more in tune with and place greater value in the natural environment having recognised that it is a significant contributor to our well-being. Canberrans have deepened respect for their 'garden city/Bush Capital' roots.

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<sup>69</sup> The early 21st century measure of success – 'gross domestic product' per capita – is as remote to our thinking as are the witch hunts of the 17th C. The biggest failing of GDP per capita was that it did not capture the fact that most people were receiving little or no benefit from any increase in GDP growth.

Table 5: Scenarios where the narratives are developed further

	'The perfect storm'	'Snakes and ladders'	'Return to Burley-Griffin'
	Scenario 1 (blue)	Scenario 4 (red)	Scenario 6 (green)
What if ...	... anything that can goes wrong	... simply muddle through	... everything falls into place
Economic vitality	lethargic	buoyant	buoyant
Social cohesion	fragile	resilient	resilient
Environmental concern	act later	act later	act now
Population - 724,805 (average)	higher than average	average	higher than average
Population density – 2.49 (average)	higher than the average	average	less than the average
Other uncertainties <sup>70</sup>	To be described in the narrative	To be described in the narrative	To be described in the narrative
How achievable is the Belconnen vision?	To be described in the narrative	To be described in the narrative	To be described in the narrative

<sup>70</sup> They must make sense in terms of the three key parameters (economic vitality, social cohesion and environmental concern)

## Scenario 1: The 'perfect storm'

A confluence of downside circumstances means that in 2040 this is a world where, no matter what we decide and do, we end up on the wrong side of the future. The real problem is that our compass points in exactly the wrong direction. Australia is a very small country<sup>71</sup> with a very open economy. These facts are sometimes easy to forget. No matter what our politicians say during election campaigns, the fate of the Australian economy – the big ups and downs – have been determined by global conditions, not domestic ones. But, we have contributed to our problems – our compass points in exactly the wrong direction. The economy has 'tanked', yet we are still addicted to growth (governments) and wealth (individuals). No action is taken by governments unless you have shown it to be 'uneconomic.' Even if there is willingness among people for change, they often fail to succeed in lifestyle changes because they are confronted with factors that lock-in their unsustainable behaviour and choices. For example, progress on climate change was almost constantly (stalled over several decades) by warnings of harm to economic growth – it will 'kill jobs' – even though climate change was already pummeling regional economies. What remains salvageable of our natural environment – that provides us with food, energy, and water – is now collapsing. Polls show Australians are bitter about the long queues for housing and hospitals, as well as growing fury at surging food prices, power cuts, and water shortages. We rarely participate in community member-based organisations. Tax avoidance is very widespread. Thousands of people are working in the shadow economy i.e. working 'off the books' for legal businesses or raking in tradable 'Net-tokens' with illegal ones ('cash' vanished in 2025). The size of this grey zone is elusive but it is thought to be between 8 to 16 percent. This is only part of a wider story of rising crime in an increasingly fragmented, fractious, and alienated society.

Table 6: Snap shots of what might happen in dire circumstances by 2040 – a 'perfect storm'

 <p>social change</p>	<p><i>Upward mobility is increasingly unlikely. Income inequality is high, and rising. As the gap between rich and poor rises, 'bashing' and murder rates follow - people to turn against each other, rather than governments although suicide bombings are more common. Well to do people continue to lobby for more public law enforcement, and supplement this with additional security measures. There is a growing number of survivalist groups – survivalists consider disasters inevitable (climate change, power outages, market crashes and oil spills) – no one is responsible, these things just happen. And the survivalists' response is 'every man for himself.'</i></p>
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<sup>71</sup> Overseas there are cities with more people than our entire country.

 <p>economy</p>	<p>Our governments are flat broke (unmanaged healthcare costs are a big contributor). We don't really understand the extent of the problem as the national media, which generally covers fiscal affairs, does so by repeating what it's told. Local government is hopeless and has a bad name with the local community and residents are poorly served. While some Commonwealth governments tried to address our national insolvency earlier, efforts were sporadic – not persistent – although the tax increase (of 69 per cent) has remained in place. People are in public housing (what little there is available) for a long time, Australian governments see it as a place to leave people without addressing the complex needs that brought them to be there in the first place. 72 per cent of all residents attracting government subsidies are single adults.<sup>72</sup></p>
 <p>food</p>	<p>The incidence of 'big' drought has increased from once every 25 year on average to once every 2 years in southeast Australia by 2040; the probability of intense precipitation on any given day has increased by 23 per cent over the last 50 years. Agriculture remains heavily dependent on seasonal weather. With climate change exacerbating weather variability, more frequent weather extremes have caused significant jumps in staple food prices. In the past two years alone drought has driven average Australian food prices up 12 per cent.<sup>73</sup> Price hikes have driven some changes in diet, and 'front yard' and 'verge' gardening are wide-spread.</p>
 <p>media</p>	<p>We are in the midst of the 'Wild West.' We are plagued by clandestine information gathering (drones). The internet is riven by hackers, and cyber-attacks – that's given rise to a new digital divide between those with access to expensive security measures in gated Internet enclaves and those who tread warily across the free but dangerous Internet. Demand for new devices has drastically and people's willingness to pay for applications and services eroded. Governments are adept at using mobile devices to geo-track citizens and implicate them in anti-government activities.</p>
 <p>energy</p>	<p>The days of three car households are gone; not as many of us drive in 2040. Even with a more diverse fuel mix, increased transport costs (fuel and freight) have adversely affected most Australians – driving up petrol and food prices. In Canberra and environs the impact this has been more acute for households on the urban fringe and in regional areas. Fortunately, passive building design, when it is used, has actually helped reduce heating/air conditioning costs.</p>

<sup>72</sup> In NSW in 2013 about 58% of public housing was occupied by single adults.

<sup>73</sup> These percentages are derived from Bureau of Meteorology reports and Climate Institute reports.

 <p>environment</p>	<p>Canberra's population and urban footprint has grown far larger than originally planned or imagined. As a consequence, the condition of the 'bush' that surrounds and intersects the city has deteriorated. There is very little 'bush' in the 'bush capital,' both Canberra's urban forest and the surrounding natural environs have significantly deteriorated.</p>
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## Scenario 4: 'Snakes and ladders'

Getting to 2040 has been a game of snakes and ladders. Technology has finally changed the way we work, live, and play. We trust only a few others – deeply – and are heavily reliant on our personal networks<sup>74</sup> to help us make our way in this decentralised, complex world. Consumerism is at an extreme. We define our identity through what we own. Most structures are 'living buildings' whose intelligent systems adjust to the needs of inhabitants, respond automatically to variations in weather, and produce more resources than they consume. Autonomous robots and artificial entities outnumber people in every home. If you can afford it, anything you want is now being delivered at home (food, books, cars), or made by the stay-at-home parent/entrepreneur next door (e.g. local bespoke '3D' tailors print clothing). Generally, the economy is made up of far more small and micro-businesses specialising in 'open design, open hardware, and open products'. Your home network informs you about local activities and is linked to the transport system and neighbourhood health centre, which receive data. You are constantly being monitored (what you email, where you shop, how you shop, what you say, where you drive, what you read.) Financial pressures and the associated status anxieties are rampant – digital-free 'black box' modules are becoming popular (when you want to be 'off the grid' entirely). Family holidays are a rarity – kids today find enough exciting things to discover through virtual tourism services and augmented reality games like 'Geek, Freak, or Sneak.' Our politicians pretend they can steer the economy like a ship. But we have a very small ship and it's a very big ocean. From a public perspective we have 'wised up' – government is not that important – people generally do what they want – held in check only by their virtual and real communities – and then pay the fines to government for so doing.

<sup>74</sup> Many Australians have diversified their intake of information in the past three decades, relying less on a few major networks and top newspapers, and yet the ABC (commercialised) has still been hugely influential.

Table 7: Snap shots of what might happen by 2040 if technology investments pay off

 <p>social change</p>	<p>Today people are cautious about whom (&amp; how) they let into their inner circles. We haven't forgotten the street crimes and violence of the 2020's. Our 'fortress mentality' has influenced both our thinking and lifestyles. We don't stray too far from those with similar opinions, and incomes. We like staying at home, we know our immediate neighbours, and we are suspicious of strangers. A recent spike in internet-enabled crimes (using 4D printed guns, printing psycho-active drugs) has the police and law enforcement officials worried.</p>
 <p>economy</p>	<p>Although not everyone would agree, the 'Troubling 20s' – the pandemic attributed to the overuse and misuse of antibiotics – was a blessing in disguise. Now, at the backend of the 'Roaring Thirties' we have a strong research-based and innovative economy focused on tackling health, ageing, sustainable agriculture, soil quality, and biodiversity loss. Canberra has made significant investments in green infrastructure, including green roofs, bioswales, rain gardens, permeable surfaces, etc.</p>
 <p>food</p>	<p>About 25 per cent of local residents continue to grow a good portion Of their food (and stock up our farmers markets), the rest of us mainly order pre-prepared food on-line (and fat pills). A network of drones delivers food across the city. Maybe we'll have financial incentives to purchase more nutritious foods.</p>
 <p>media</p>	<p>ICT has permeated all aspects of our lives. Canberrans use of online media is quite diverse. There are great business successes – for instance – 'E-dutech' schools first pioneered in Canberra are the dominant model; very few 'orthodox' learning institutions – like Canberra Grammar – remain. Students are taught how to think instead of what to think.<sup>75</sup> Nonetheless, the social impact of being on-line a lot is mixed. For instance while it reduces the social isolation of our elderly, it has interfered with broader community building efforts – online communication does not build social connections off-line. And, we spend a heck of a lot of time on-line.</p>

<sup>75</sup> Online learning has reversed the learning process by having students independently study lectures online prior to class. This allows class time to be used for peer discussion and practical application of the learned content, which refines students' understanding and helps them assimilate their knowledge with others' ideas. Community hubs (re-purposed buildings in older neighbourhoods) and online sites help students connect the knowledge and ideas they formulate in class with those of leading experts and other prominent thinkers, exposing them to different perspectives and beliefs.

 <p>energy</p>	<p><i>Our houses are well designed, and we use less water and energy than ever before. Most of our household energy needs are met from renewable resources, many neighbourhood co-ops have biomass production that even allows them to feed back to the main grid. The shock of the pandemic – which led to severe restrictions on the movement of people and trade – helped diminish our love of the car.</i></p>
 <p>environment</p>	<p><i>People are oddly connected to and disconnected from the environment. Some residents think of nature as irrelevant to their everyday lives. Others think of nature as somewhere else. After overcoming scruples about biotechnology and nanotechnology, and geo-engineering (the climate) we have re-invented nature. There has been a significant increase in community groups whose aim is to garden nature. The natural environment is not so ‘natural’ – we have modified nature to help us out – for instance to reduce energy costs most neighbourhoods are lit by ‘living trees’ – eucalypts spliced with glow fish genes. Revive &amp; Restore (Australia)’s success at bringing back the Tasmanian Tiger is still controversial three years later – the company’s mission is to enhance biodiversity through genetic rescue of endangered and extinct species. The next candidate is the dingo.</i></p>

## Scenario 6: ‘Return to Burley-Griffin’

It’s 2040 and Walter Burley Griffin’s original intentions continue to influence overall development, particularly in the parliamentary triangle, principal avenues and wooded urban hills. Luck is on our side. A series of good decisions, good fortune, and happenstance lead us to a very different sustainable world – although the journey there was not without pain. These changes would not have happened without: a strong economy, policy and governance shifts and social innovation and individual behaviour change. We have survived a series of disasters – flood, droughts, bushfires, and a major pandemic in 2017. Public interest in water issues has only grown over the years with the rise of ‘extreme water’ (i.e. water that is either too much or too little). Governments across the country imposed post disaster levies, to the point of public outrage – until this opened the door for broader tax and economic reform.<sup>76</sup> Keystones in Australia’s recovery process from the early series of disasters included moves to structurally shift the economy – towards goods and services that are sustainable – and that are attractive to Asia’s middle class consumer.<sup>77</sup> This succeeded beyond our expectations. In 2040, our current economic strength is not just a China story, our steadfast pursuit of innovation has paid off too. In Canberra, high

<sup>76</sup> An often reported fact on the Australian tax system is that of the more than 100 state and federal taxes in Australia, only 10 collect more than 90 per cent of government revenue. The obvious question then becomes, what is the cost of collecting this revenue and is there a better way? Logic suggests that this system is not efficient, effective, or sustainable.

<sup>77</sup> Estimates vary but in about 15 years (from 2014) Asia will have 3.2 billion middle class consumers. The Australian market will be less than 1% of the Asian middle class consumer market.

tech business clusters benefit greatly from drawing on the cities' knowledge-intensive environments and the highly educated population. Of course it is largely a China story, after all 'a child born in 2017 will spend their entire working lives with China as the world's biggest economy.'

Table 8: Snap shots of what might happen by 2040 if societal attitudes change

 <p>social change</p>	<p>Awareness of the unfeasibility (and undesirability) of the status quo spreads among people and governments, accelerated by the early series of catastrophic events. It's taken decades but businesses, governments, investors, and individuals now think and act with much longer-term horizons in mind. Consumerism has lost its glamour and is gradually replaced by a growing interest in well-being. People care much more about well-being and quality of life than they do about conspicuous consumption. One of the big achievements has been that we have 'greened the greys.'<sup>78</sup> Networks of 'health hubs' emerge (promoting exercise in public spaces and encourage active aging and wellbeing for all.)</p>
 <p>economy</p>	<p>The 2010's laid the foundation for a new economy – while we had to go through a disruptive period– it cleared the decks (what strategists call a process of 'creative destruction') and has allowed a new economy to emerge. Canberra has been a good example for other cities in Australia, and globally. The development of and broad public support for a 'roadmap to sustainability' in 2022 was a milestone achievement. This has accelerated green innovation in the Capital. We no longer act as though people are scarce and nature abundant ... now, people aren't scarce, but nature is. Our economy always takes the needs of sustainability into account – for example – businesses don't create environmental problems while they generate a profit – true win-wins. Another example of taking sustainability into account might be housing or tax policy reform (e.g. removal of negative gearing, capital gains exemptions, and so on).</p>
 <p>food</p>	<p>Our diets are quite different – comprised of: significantly less meat and more alternative proteins (including 'lab burgers'), sea vegetables, edible weeds, alcohol that doesn't get us drunk (and lessens problems in the 'night time economy'), genetically modified foods (labelled), and meal replacement drinks. We'll have health planners as well as financial planners. As well, LED technology, sensor technology and all sorts of ICT applications are affordable and used for indoor, layered crop production (urban food developers). However, traditional food grown locally remains a significant part of what we eat; processed foods (high salt, high fat) are historic relics. Urban farmers – partly crowd funded – love to share knowledge and craftsmanship with the young and the old and they rely on volunteers in</p>

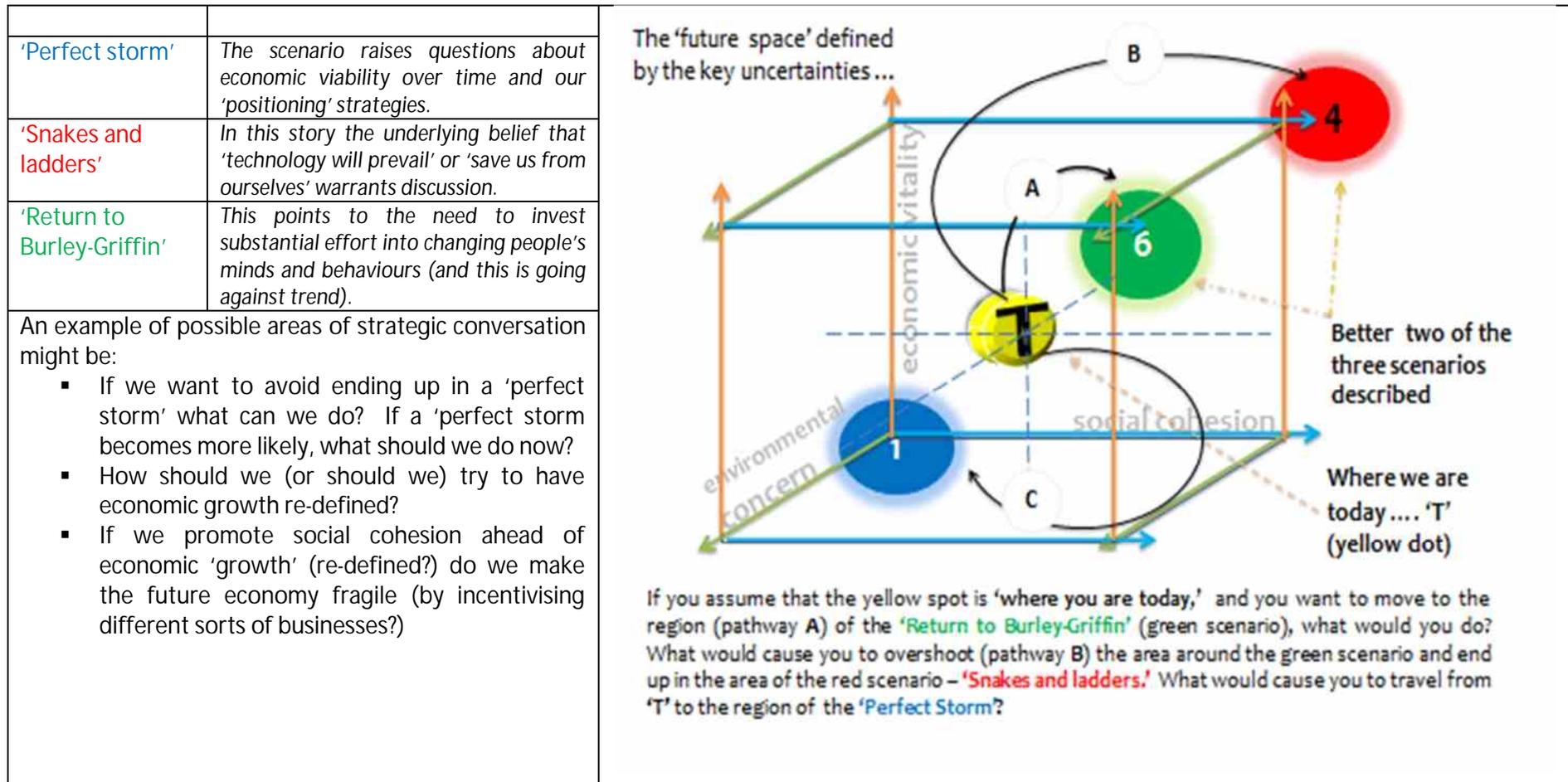
<sup>78</sup> We got much better at cultural engineering – for example, in the 2010s and 2020s older people were politically active but more conservative (perhaps because they had their pensions invested in incumbent, older order industries and companies) – so we had to change their (un) willingness to support and invest in solutions designed to dramatically change our society.

	<p>addition to their regular employers (making an interesting mix of people). Urban farmers are also paid to maintain 'public greens' near the farm.</p>
 <p>media</p>	<p>Privacy is dead. Digital, other media and drones have reduced not only the time it takes to build a reputation, but also the time it takes to destroy one. Communication is increasingly disaggregated across multiple social networks (the next Facebook or Twitter), ordinary citizens track company and government sustainability performance and widely share their perspectives – welcome to the age of radical transparency. Fewer people read, or write; books are 'videos.' The computers we use are driven by 'voice.' Children are instead thought to think. Your children will be able to invite B1 and B2 into your lounge-room (or their kindergarten) to dance.</p>
 <p>energy</p>	<p>Innovative technologies that increase material, water, and energy efficiencies and reduce wastes are widely adopted. However, we have yet to really conquer our love affair with the car. No matter what incentives and infrastructure are developed (car sharing, public transport, and active mobility options) we simply won't be inconvenienced. Sure, we plan our trips more carefully – given fuel and electricity prices – but we can still 'afford' a car.</p>
 <p>environment</p>	<p>Australia has embraced 'natural capitalism.' Greenhouse emissions slow down during the extended periods of crisis, resume for the period of economic recovery, and gradually diminish thereafter, due to the changes in technology and consumption patterns. Nevertheless, global warming keeps increasing due to the lags in the climatic systems, but the global climate gradually stabilizes in a safe regime before the end of the century.</p>

## What about strategy? How achievable is the Belconnen vision?

The individual scenarios can be used to inform strategy and risk management – for example – where are your most challenging changes going to arise? Figure 6 is a sample of the type of thinking that might be undertaken. These types of discussions need to be work-shopped with appropriate team members and decision-makers.

Figure 6: Consider possible movements along the individual change driver axis and around the entire 'future space'



## What to watch for? Signposts

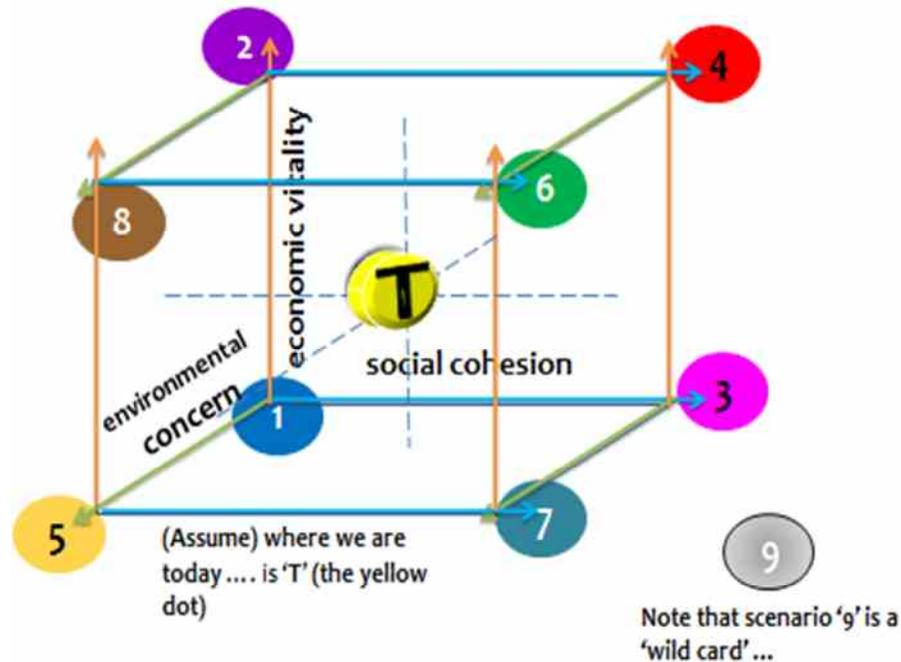
For strategising, it is useful to identify 'signposts' for each scenario: events or metrics that signal when a scenario is unfolding, such as a drop in the rate of adoption of a new technology or numerous debt defaults within a specific sector. When linked to a scenario, they serve as clues that allow decision-makers and their advisers to move very quickly (if you see things veering away from or toward your underlying assumptions). These too need refinement, in a workshop setting. A straw-man list is below.

Table 9: (Suggested) Scenario signposts

	Perfect storm	Snakes and ladders	Return to Burley-Griffin
Political signals	<ul style="list-style-type: none"> <li>Consistency of 50-50 major party polling</li> <li>Absence of major tax reform</li> <li>Increasing polarity of views and 'nastiness' in media</li> </ul>	<ul style="list-style-type: none"> <li>Regulation of biotechnology loosening, drones regulations, changes in intellectual property laws</li> <li>Declining participation in elections (rising penalties for non-voters)</li> <li>More MPs/Union officials charged</li> </ul>	<ul style="list-style-type: none"> <li>Support for Greens and *others*</li> <li>COAG cooperation increases</li> </ul>
Economic signals	<ul style="list-style-type: none"> <li>Economic instability (notably in China)</li> <li>Percentage of people experiencing mortgage stress grows/introduction of new mortgage products</li> <li>Failure of non-profit, charitable organisations (or 'bad press')</li> </ul>	<ul style="list-style-type: none"> <li>(Declining) research &amp; development spending &amp;/or underfunding of major research institutions</li> <li>School closures</li> </ul>	<ul style="list-style-type: none"> <li>Impost of tax 'levies' (and what they are for)</li> <li>Emergence of Asian middle class (more students in Australian Universities, Asian tourism)</li> <li>Melbourne 'food precinct' funding and successes/failures</li> </ul>
Social signals	<ul style="list-style-type: none"> <li>Increase in inter-personal violence</li> <li>Declining tertiary enrolment</li> <li>Growth in academic use of 'security' in literature</li> </ul>	<ul style="list-style-type: none"> <li>Car purchases/drivers licences issued</li> <li>Growth in 'fix quick' health advertisements</li> <li>Antibiotic prescription rates (&amp;/or measures of endocrine disruptors etc. in water)</li> </ul>	<ul style="list-style-type: none"> <li>Tougher animal welfare regulations</li> <li>Number of charities and non-profits occupying the 'green space' – especially on 'single issues'</li> <li>Increase in number of women managers *and others*</li> <li>Growing number of mental health professionals</li> </ul>
Environment (concerns)	<ul style="list-style-type: none"> <li>Nature of 'major' movies/television – catastrophizing (dystopia)</li> </ul>	<ul style="list-style-type: none"> <li>School programs to remedy nature deficit disorder</li> </ul>	<ul style="list-style-type: none"> <li>Increased (2007 levels) interest in popular media for climate change</li> </ul>

## Wild-card scenario(s)

Figure 7: alternative scenarios are plausible, but not equally likely



Of the infinite number of alternative scenarios possible, there are also wildcard or game changer scenarios. These are mostly about what is beyond our ability to imagine today (or what is considered impossible). We would depict this as Scenario 9 (grey). These significant discontinuities with disproportionately dire consequences (that are not deemed credible) place us outside the scenario space entirely. However, creating scenarios around such dramatic events lowers the effectiveness of the process. They don't happen very often. To spend significant resources to deal with them is to move into a state of paranoia.

Nonetheless, it is important to think about the consequences of wild cards or highly improbable 'game changers,' for example; we could have New Zealand become a 'State' of Australia which *might require changing the location of Australia's capital*. [One alternative already proposed is to move the capital to Perth from Canberra (Orr 2012).]

The consideration of wild cards and game changers are designed to serve as a reminder that there are some environments in which rare futures are simply not predictable, or, impossible to imagine. Because we simply cannot imagine some changes we need to re-think strategies and ensure they are more *robust* in the face of uncertainty – i.e. that they will work in many different situations.

A second reason that wild card scenarios should be considered is to brainstorm, where possible, important surprises could occur – especially when the wild card scenarios are plausible futures that violate one of the assumptions that underlie the scenario set developed (for example all of the scenarios described in this report assume some form of environmental degradation or decline is inevitable – and that it will continue into the future – fast or slow is the issue – they do not consider a sudden collapse ('tipping point' in the ecological jargon). One wild card is 'what if' the environment actually becomes unliveable overnight? Does that change your strategy? Another omission is that all of the three 'main' scenarios that we developed further start with a period of economic difficulties. Two of the three then 'get better.' Does that change your strategy? And, a third example is that we do not consider rapid, prolonged, and *widespread* life-extension interventions – in other words healthcare is unevenly distributed – so, 'what if' *absolutely* everyone lives to 150+ years old? Does that change your strategy?

'In the 21st century, cities will increasingly be the frame through which we understand and shape our shared economic, political, and cultural circumstances. They will also be ground zero for the collision of economic, environmental, and social imperatives that define sustainability. Together, these facts suggest that in proactively addressing the challenge of urban sustainability, there may also be an opportunity to harness the power and positive characteristics of cities to drive sustainability more widely.'<sup>79</sup>

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<sup>79</sup> Al-Shawaf, M. and C. Guenther (2012). Citystates. [How cities are vital to the future of sustainability](#). London: SustainAbility.

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Six scenarios were developed (as well as an evidence base). The scenarios were: 1. Full Speed Ahead: Super Global City, 2. Hitting the Buffers: London Falling Apart, 3. Steady Ahead: Growing Outwards, Growing Greener, 4. Knocked Off Course: Shocks to the System, 5. Out of Control: Divided City, and 6. Brakes On: London in the Slow Lane. Three are core.

Scenario 1: Full Speed Ahead – Super Global City In this scenario London is characterised by high population growth, a prevailing social attitude of 'tolerant co-existence', and a very strong economy (i.e. one with growth in output and employment exceeding the most optimistic of current predictions). Significant and continuing investment in London's transport infrastructure enables continuing population and workforce mobility. There is a mature, well-established market for public service provision, in which private and third sector providers are major players.

Scenario 2: Hitting the Buffers – London Falling Apart This scenario explores the impact on London of increasing out migration but steady population growth due to a higher than expected birth rate, and a prolonged recession. These trends combine with others to create a prevailing social climate of fear, suspicion, and competition between communities. The capital has long been overtaken by international competitors and is no longer the destination of choice for economic migrants, let alone tourists. The poorest people live increasingly beyond the margins of formal society: in health and housing conditions that seem to belong in a past century.

Scenario 2: Steady Ahead – Growing Outwards, Growing Greener In this scenario London is characterised by population growth in the middle band of current predictions, a prevailing social attitude of 'tolerant co-existence' and medium economic growth (i.e. with growth in output and employment in line with current long-term predictions). The last fifteen years have seen a shift of people, money, and power from the centre to the suburbs, and from there onwards down to local wards and communities. Whilst this has had many positive benefits, London as a whole is something of a patchwork, and standards vary considerably. Sustainability and the environment have continued their steady rise up the political and personal agendas.

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Terra Form Australis proposes an Australia in which a vast larger population is accommodated on the continent. Through massive terra-intervention, a channel that allows seawater to flood the low-lying areas of the interior alleviates limited to urban growth and permits new sustainable cities to be built. Powered by 100 per cent renewable energy, these new cities are in balance with native biodiversity – as well as being globally networked, diverse, and inclusive

Fear Free City Is a city in which inhabitants no longer fear stepping from the private to the public realm. Movement is not limited to the ground level but rather pervades the volume through multi-level public spaces and visible links across and between all levels. Rather than 'escaping' from the city to the suburbs, this vision wants to liberate people from the fear of the city by offering infinite possibilities of urban choice.

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