THE UNIVERSITY OF SYDNEY

John Grill Centre for Project Leadership

Why wait for Government?

Customer-led DIY infrastructure, Australia's No. 1 priority

Policy Outlook Paper No. 3

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Better Infrastructure Initiative

Global Leadership Partner

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Acknowledgements

Collaboration is a very important mark of distinction for the Better Infrastructure Initiative, John Grill Centre, and the preparation of this paper benefited greatly from it. In particular I am indebted to Dr Ken Henry for both the challenge and inspiration to write on this important subject. Gordon Noble and Glen Kierse for expert contributions and insightful feedback on earlier drafts.

I am very grateful to the National Australia Bank as a Global Leadership Partner that has made the delivery of this paper possible, and for Steve Lambert's leadership.

Thanks to Dr Tom Parry and Leanne Gordon for thoughtful and challenging remarks on earlier drafts, along with Arindam Sen for research support.

Special thanks to Vanessa Buchmann for diligent administrative coordination across every aspect of the paper, and colleagues at John Grill Centre.

Of course, I remain as always responsible for the views expressed and the accuracy of content of this paper.

Garry Bowditch

Executive summary

Australians are self-starters, independently minded and with a strong sense of community and customers. It comes as no surprise that Australians have a rich history of solving their own problems, be it for infrastructure, business or cultural advancement without idly waiting for government.

Customer-led 'do it yourself' (DIY) infrastructure is a national investment priority. It is a call to un-limit the nation's assets and services to greater dynamism and entrepreneurial uplift. Australia has a rich history of infrastructure protagonists where their legacies are scattered across the vastness of Australia's landscape.

Its rivers and coastline show where individuals and communities banded together to finance fund and build warehouses, wharves, roads, bridges and railway lines. It is not an exaggeration to say that Australia's do it yourself attitude has been a major driver of the Australian economy.

Changes from new technology and escalating community preferences for energy, transport, water and waste highlight that infrastructure in the 21st century is shifting so services, data and choice are the new levers of enduring growth, jobs and opportunity.

But is the nation readying itself for this future?

Political volatility may continue, however the leadership of all infrastructure stakeholders must prevail.

Unlocking economic growth with dynamism, enterprise and social cohesion can be done, especially by accessing and liberating deep talents, skills and collaboration capacities that are abundant in the Australian community.

Vision and passion of infrastructure protagonists drawn from citizens, community groups and business are key market actors that bring imagination and agility to challenge and disrupt traditional 'silo' infrastructure as well as to help stitch together a better functioning system-wide performance.

Tapping the full potential of these protagonists will require Australia to improve the quality of data and transparency of decision-making across every aspect of infrastructure. Markets are empowered by information, and their efficiency is determined by it. So it is no surprise that this is also what activates DIY protagonists to have a clear line of sight to gaps, bottlenecks and under performance that can be remedied.

It is time to strengthen the infrastructure ecosystem with more community and business protagonists as the epicentre of a new decision making model. Its objective is to marshal infrastructure investment and the rapid realisation of better services, new markets and higher productivity; the alchemy of why investment occurs in infrastructure in the first place.

Investors

It is time for investors to stand up as infrastructure stewards.

There is much discussion about capital abundance and the desire of superannuation and pension funds to invest in infrastructure. This is a good thing and should be helped where possible. But if investors want long-term trust from the community, then they are going to have to demonstrate that long-term ownership of infrastructure assets results not only in better services, but also responds to changing needs of customers.

Investors and businesses in infrastructure are on the threshold of an important opportunity to lift performance when they reprioritise objectives and resources to better engage, innovate and fulfil the escalating expectations of customers. The DIY infrastructure protagonists discussed in this paper are setting the standard, and now their impact needs to be at scale.

There are untapped commercial, environmental and social benefits awaiting investors that are prepared to go beyond basic compliance to contracts and concessions that have been awarded from government.

Reporting regularly on service performance for infrastructure assets is one way to encourage better services and quality long term stewardship.

Business

Business has an important role to play in developing the infrastructure for tomorrow through innovation and risk taking. Digital connectivity is opening up many new opportunities, but just as important is business being a risk taker. The Pilbara was opened up in the 1960s through the mining sector being prepared to take on risk. Most recently, Brisbane West Wellcamp Airport serves as an example of a family business being prepared to take a big development risk and future patronage.

Correcting infrastructure gaps and making new markets, demands a business sector that is more front footed to imagination, innovation and risk taking without waiting for government. This is a critical way for Australia to efficiently meet the great diversity of needs in both cities and regional Australia.

It is also important that Australian Securities Exchange (ASX) companies, which are a fundamental engine of business risk taking, do more for new capital formation. The ultimate responsibility however rests with business, which has the capacity to be a major driver of infrastructure development and risk taking across the nation.

Community

With an estimated $47 billion of community infrastructure[1] that is in a poor to very poor state requiring immediate renewal or upgrade, it is time for communities to seize the opportunity to determine the infrastructure[1] they want, without waiting for government to tell them what, when and how they will get it.

The Better Infrastructure Initiative at the John Grill Centre for Project Leadership is seeking to stimulate a conversation concerning the establishment of a Community Infrastructure Ecosystem. Its purpose, to accelerate the role and impact of the DIY infrastructure protagonist, and could consist of three inter-linked elements.

1. **Community Infrastructure Hub** that develops community ideas on projects where individuals, groups and clubs can join up with other like-minded groups; strengthen their collective ideas in readiness for financing and funding.

2. **Community Capital Enterprise** is the financing and funding arm of the ecosystem, and would act as a market maker, in mixing and matching projects with capital. The vision is for the Community Capital Enterprise to be a new investment market that has the potential to be valued in the order of $10 billion in 3-5 years.

3. **Project management and delivery** will be specific to each project in accordance with the capital providers and with ongoing community oversight.

The ecosystem is a concept that will be tested with stakeholders and is intended to be a catalyst in bringing together business, universities, providers of capital, government and the community sector and consolidate both efforts and outcomes. While independent of government the ecosystem should collaborate with them where it makes sense to do so as part of its mandate in enabling DIY community protagonists.

A customer-led DIY infrastructure future can start today.

The ecosystem will bring together business, universities, government and the community sector and consolidate both efforts and outcomes.

Recommendations

1. Identify projects & prioritise
The impact of DIY infrastructure protagonists (Chapter 2) in Australia suggests that investors, business and the community can and should assume more responsibility for sourcing, scoping and specifying projects. In doing so, they should clearly annunciate problems to be fixed and objectives to be achieved that enhance the whole infrastructure system without necessarily waiting for government.

2. Focusing on customers not contracts
Just as DIY infrastructure protagonists are not constrained by status quo, investors and businesses can further tap latent commercial, environmental and social benefits in infrastructure. Reprioritising objectives and resources in order to create more opportunities to engage, innovate and fulfil the expectations of customers beyond the 'black letter' of contracts and concessions with government is required.

3. Service performance reporting
Infrastructure asset owners and operators, alongside DIY protagonists, can meet community expectations by demonstrating that they are delivering service quality performance and long term stewardship for their infrastructure assets.

4. Strengthening the whole system
There is an urgent need for government to build on the high level of excellence in the management of the subsystems of infrastructure (electricity, water, waste, rail, roads) to achieve a higher level of assurance towards the stewardship of system-wide outcomes.

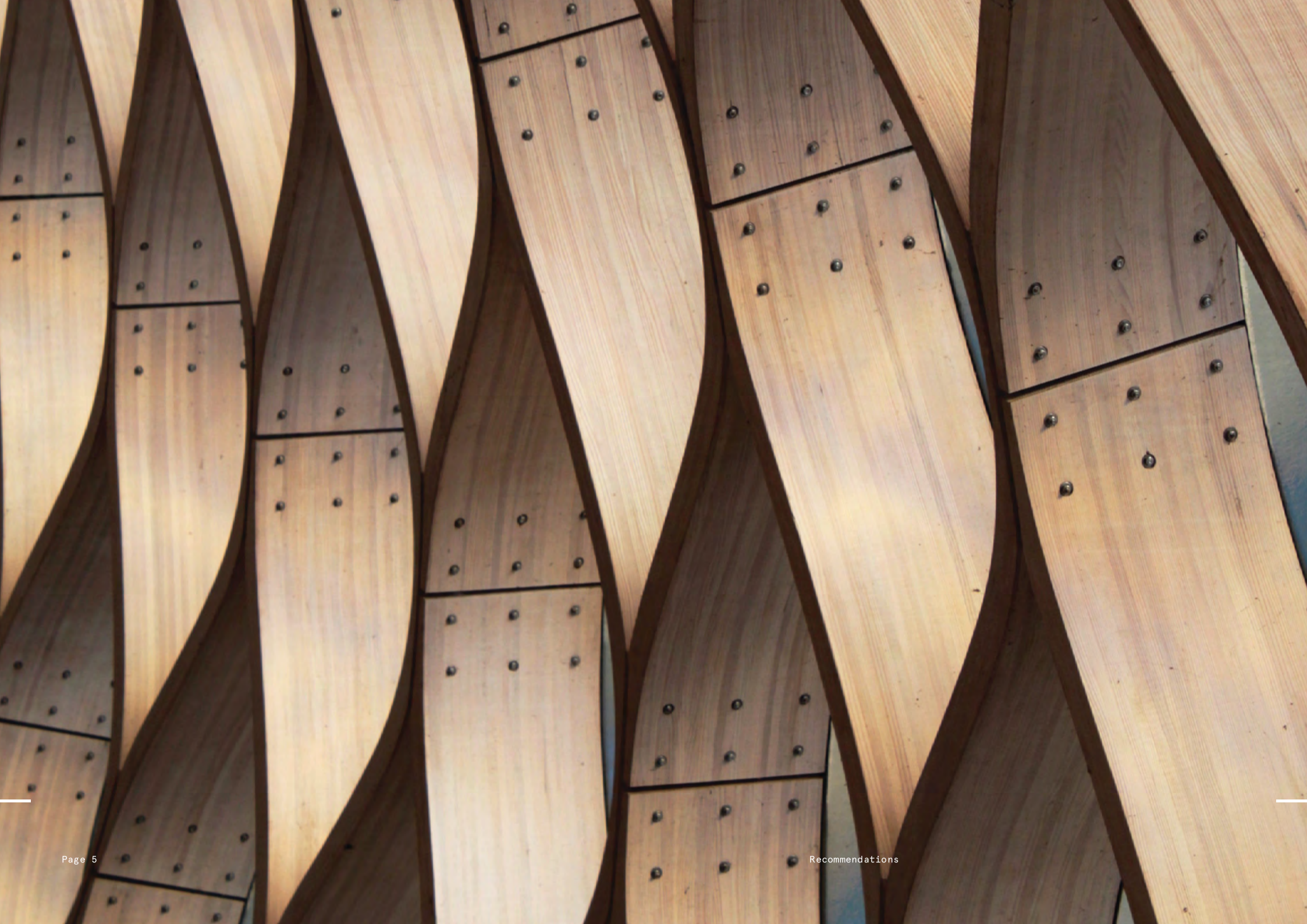
5. A new infrastructure model
DIY infrastructure starts at home with the establishment of a Community Infrastructure Ecosystem that enables DIY protagonists from Australia's many communities to take greater responsibility for identifying and prioritising its own infrastructure through a Community Infrastructure Hub (Chapter 2).

6. Getting back to community
Business, universities and the community sector should collaborate in the co-creation of the Community Infrastructure Ecosystem that brings community groups and local councils together to initiate and develop viable projects.

7. Connecting capital
Major finance institutions should work together to create alternative mechanisms to fund and finance viable projects that can be facilitated through a Community Capital Enterprise initiative (Chapter 3).

8. Genuine partnership
Government has a responsibility to all stakeholders to be a stable, consistent and predictable collaborator for the entire asset life cycle of infrastructure. Government should commit to a higher standard of partnership that lifts investment confidence, embraces innovation and entrepreneurism for betterment of the whole system.

9. Better data
Governments should make available data and information concerning the service standards of all public infrastructures in order to engender greater competition and innovation. A further commitment is required to have regular reviews, so that as technology changes regulation can too.



"DIY infrastructure protagonists empower communities to be centred on customers and services."

Garry Bowditch
Better Infrastructure Initiative

Chapter 1
Introduction

Australia has an enormous benefit from being an advanced middle-sized OECD (Organisation for Economic Co-operation and Development) economy that is open and dynamic.

Its economy and population are relatively small but this is not a disadvantage for providing infrastructure or critical services that underpin living standards. Middle-sized economies can be more connected to their people, yet limit the congestion and poor environmental amenity of their larger peers while being agile, adaptive and innovative.

A strong 'can do' culture in favour of trade and investment has been a hallmark of the Australian economy. Across agriculture, mining and later in advanced manufacturing and financial services great national successes can be attributed firstly to the people behind these great achievements, and secondly to good institutional architecture that enabled them to succeed.

This Policy Outlook Paper asks if these ingredients of growth and progression are sufficiently present today. Are individuals, not-for-profit organisations and corporates able to act on their infrastructure vision, and do institutions, both public and private, on the whole hinder or support them? Can we first match and then exceed past infrastructure achievements? Because Australia must seek to do both if there is any possibility of meeting the extraordinary challenges ahead.

Outperforming Australia's extraordinary history in infrastructure with greater smarts and less dollars is critical to national prosperity. Demographics and the challenges of technology and competitiveness provide a compelling case for reform. Australia's demography may not imply its destiny; but it can reveal a great deal about what must be done to prepare for the future.

Australia's population is expected to grow by an extra two million people every five years. Over each forthcoming decade, that equates to creating a new city the size of Melbourne or Sydney.

As has been argued in the John Grill Centre's Better Infrastructure Initiative's Policy Outlook papers No. 1 and 2, the microeconomic reform lessons of the 1980s and 1990s point to the successes of corporatisation and privatisation as being very effective. These reforms sought to help government get out of the way of customers, community and business working together in the choice of services they most value.

Individuals, community groups, not-for-profits and businesses can act more boldly to invest, build, renovate and operate economic and social infrastructure without waiting for government. Removing unnecessary obstruction for DIY infrastructure protagonists is an important step to a more empowered community that is centred on people and services.

"Do not wait for leaders; do it alone, person to person."

Mother Teresa

This Policy Outlook Paper is in response to a challenge from Dr Ken Henry AC (Chairman, National Australia Bank) at the inaugural Australian Infrastructure Dialogue convened by the Better Infrastructure Initiative. He argued that there is a need for a step change in infrastructure where business and community can and should do more.

> "...we should be identifying commercial opportunities with positive spill-over benefits that might be advanced by business without the assistance of government. And then we should be very precise about what is needed from governments; the bit that we can't do ourselves."
>
> **Dr Ken Henry AC**

This Policy Outlook Paper contends that high quality long-term outcomes in infrastructure are more assured when customers, community and business are fully engaged across all stages of the asset life cycle. This has been a consistent theme of preceding papers of this series.

Customers first, then government

It is difficult to identify an infrastructure project in modern Australia that in some way has not been touched by government. Since the early pioneering chapters of the nation's history, the role of government has expanded rapidly in infrastructure, particularly since World War II.

Infrastructure decision-making has been increasingly centralised and commanded by government. While creating national-scale electricity and water networks had clear benefits, the community is demanding more of its infrastructure than just seeing it built and operated to a minimum ubiquitous standard.

Escalating expectations of customers and community are alive and well in infrastructure. However, governments are increasingly challenged to meet them. Innovation, technology and bespoke customer solutions are now more important than the reinforced steel and concrete that made up traditional infrastructure. All these, however, will be necessary to underpin the long-term development of cities while simultaneously lifting productivity and liveability.

The community and business are far more concerned with the services delivered from the infrastructure networks than the assets from which these services are generated. Adapting to the customer and enabling innovation to achieve this is important but can be frustrated through strictly governed public networks (e.g. energy, water and transport) that are conservative and resistant to change.

This can challenge policymakers particularly when they are too asset focused with construction and engineering perspectives. Government intervention and dominance in infrastructure may be a contributing factor that has caused community and customer voices to be crowded out.

We submit that government should pay more attention to setting and adjudicating on service outcomes, performance criteria along with providing policy consistency and predictability. When governments focus on outcomes from their infrastructure investment, it opens up the possibility that market actors can bring more of their genius to the problem at hand. Greater value for money and more enduring solutions are then possible in both small and large-scale interventions by government.

A case of DIY infrastructure

Historically the process of creating value for the goods and services produced from the land not only required hard work but also inventiveness and risk taking. Using private capital to build infrastructure enabled access to markets and trading with local, state, national and eventually international customers.

The legacy of 'do it yourself' (DIY) culture is scattered across the vastness of Australia's landscape. For example, its rivers and coastline show where individuals and communities banded together to finance, fund and then build warehouses, wharves and at times railway lines. Its purpose was straightforward, getting product to market, and to receive valuable inputs of grain, fertiliser and machinery to drive further productivity and prosperity.

One of the many early infrastructure decisions made by government was to construct the Great Northern Road that connected Sydney to settlements in the Hunter Valley.[2] Built by convicts at great human cost, the road was never popular and bypassed settlements. By contrast, without government intervention Cobb & Co was able to transport migrants to all corners of the Victorian goldfields, ultimately creating a network of over 13,000 miles that harnessed 6,000 horses each day.[3]

The success of DIY infrastructure protagonists was in pinpointing the exact infrastructure that was needed, and investing with a view to extracting early dividends so that it furthered more trade and investment.

DIY infrastructure appears to demonstrate that it has a clear purpose and directs resources to delivering long-term benefits to those it serves sooner rather than later. The building and construction phase while important is incidental to accessing the long-term benefits of productivity and accessing markets.

Previous generations of 'self-starters' fixed their own infrastructure problems without waiting for government. Where are the self-starter DIY protagonists of today? Are they still at work in the national economy, and if so where, how and in what form do they take in the 21st century?

Understanding where to find the modern DIY infrastructure protagonist is important. We explore where individuals, small business, community groups and big business have gone in their quest for improving their own circumstances and the nation.

We also consider how DIY protagonists operate in the Australian economy, which is now more congested, contested and regulated than ever before. Land and time are no longer abundant, and the complexity of undertaking major infrastructure in urban areas along with environmental and workplace regulation are making it more difficult to design, deliver and operate infrastructure.

How are the DIY protagonists doing it, and what lessons can we impart for reform that widens the scope for others to contribute, as well as enabling greater efficacy and efficiency of the infrastructure system? Some of the case examples we discuss will inspire, and remind investors, business and policymakers that entrepreneurism is a necessary ingredient if infrastructure is to deliver its full potential to the nation.

Despite the benefits of having large-scale government intervention in infrastructure, this paper argues there are also limits, not only in terms of fiscal restraints, but also ensuring good governance. Transparency and community participation appears to have been a casualty of bigger government-led infrastructure. Loss of inventiveness, innovation and problem solving in infrastructure is likely to reflect business, community and customers being crowded out.[4]

Australia's resilience and success has relied upon both the broad and deep talents of its people coupled with an audacity to get on with priorities of creating a fair and dynamic place for all the community to benefit. The seeds of this success require many actors in infrastructure, not a select few.

Centralised and bureaucratic infrastructure has its place; however, the broader arena for the services community need should increasingly originate from the communities they seek to serve. Without this participation, there is a higher risk of misallocating scarce resources to the wrong project at wrong time and place.

Previous Better Infrastructure Initiative reports have highlighted that modern Australia has encountered a problem that is increasingly pervasive. It concerns the current state of capabilities to translate massive infrastructure spending into tangible and good long-term outcomes like improved liveability and productivity. The roles of the DIY infrastructure protagonists can help remedy this situation, provided the nation recognises whom these people are and understand what they can do. This is the focus of Chapter 2.

Chapter highlights

- The legacies of DIY infrastructure culture are scattered across the vastness of Australia's landscape. Its success was in pinpointing the exact infrastructure that was needed, and investing with a view to extracting early dividends so that it encouraged more trade and investment.
- Government should pay more attention to setting and adjudicating on service outcomes, performance criteria along with providing policy consistency and predictability.
- Transparency of decision-making and more community participation can help improve the infrastructure governance model, and lift inventiveness, innovation and problem solving in infrastructure.

Chapter 2
Being a DIY protagonist

This chapter reviews several examples of DIY infrastructure protagonists. They come in different forms, as individuals, families, small and medium businesses, corporations and community groups.

They all bring a clear and purposeful deployment of resources to deliver what they perceive as good long-term outcomes for themselves and the communities they serve.

Who are DIY protagonists?

Australia is a nation of ideas. These case examples describe people, corporates and communities that are entrepreneurial and innovative. Their restlessness with the status quo brings little allegiance to comply with the rules of the infrastructure game. Each case study is intended to develop insight as to the importance of the DIY infrastructure protagonist to the broader economic and social fabric of the nation.

These are the stories of the infrastructure protagonists that have limited tolerance in waiting for government to act in the actual provision of infrastructure assets or improvement in services. Detailed accounts of these DIY infrastructure protagonists' case study profiles are in Appendix.

The following section distils the context and insights about the behaviour and motivation of the DIY infrastructure protagonists. At times they are driven by sheer frustration with bureaucratic inertia and overreach; for others it is more about inspiration coupled with a vision to do things better. Then there are those just concerned with equipping their communities with the right assets (and business models) so they can live healthy and active lives. From all their perspectives, none of them are looking for fancy descriptions or titles but just a sense of satisfaction of just getting the job done – being pragmatic, smarter and empowered.

Who are the DIY protagonists?

Iron Ore & Rail project, Lang Hancock
Pilbara region, WA

Power Ledger, Jemma Green
Perth, WA

Australia is an ideas nation.

These are examples of DIY infrastructure protagonists that have little tolerance in waiting for government to act in the actual provision of infrastructure assets or improvement in services. More detailed accounts of these DIY infrastructure protagonists' examples and their stories are set out in Chapter 2, and the Appendix.

Hepburn Park Cooperative Limited
Daylesford, Vic

Brisbane West Wellcamp Airport,
John Wagner
Toowoomba, Qld

Sydney, NSW

- Mojo Power, James Wyatt
- Wattwatchers, Gavin Dietz
- Transfield, Sydney Harbour Tunnel (pictured)

Reposit Power, Dean Spaccavento
Fyshwick, ACT

Melbourne, Vic

- Green Sync, Dr Phil Blythe
- Powershop, Ed McManus
- Beaumaris Sports Club Inc.* (pictured)

*http://bscinc.com.au

Source: Better Infrastructure Initiative, John Grill Centre for Project Leadership

Case study profiles: infrastructure is a risk-taking business

These case examples are intended to inspire others to step up as DIY infrastructure protagonists. But in documenting them it is apparent that more often than not, their achievements appear to be in spite of official infrastructure institutions rather than because of them.

Unfortunately, not all of Australia's laws and regulations have been developed in a harmonious, well-considered manner. Rather they may represent narrow sectional interests or prevailing orthodoxies that become atrophied over time as policy or even law, regardless of the advancement of technology, economies and society.

Case study profile 1

John Wagner – Brisbane West Wellcamp Airport
Toowoomba, Queensland

The vision of one creates opportunities for many

The Wagner family's development of the Brisbane West Wellcamp Airport in Toowoomba, Queensland, is a classic example of entrepreneurial insight and motivation overcoming bureaucratic gaps. Before Brisbane West Wellcamp was built, no international airport had been developed in Australia in over 40 years; there were no rules or processes in place for guidance; and the government view was that a local developer had no business being in airport development.

It would have made sense if the Wagners had just packed up and gone home when treated with scepticism from bureaucracy, industry and bankers. Instead they saw the airport as a catalyst for reinvigorating their original vision of an industrial real estate development in Toowoomba that is rapidly emerging as a catalyst for regional development.

Wagner's specific insight was that an airport close to premium agricultural, energy and manufacturing production could access more high value rapid delivery logistic chains for international trade. There were opportunities afforded by a lack of congestion, lower cost base and superior access compared with Brisbane Airport.

As experienced builders and developers, Wagner eliminated traditional asymmetric interests between the proponent and builder. The company had the motivation to control development costs to preserve future profits and valuation uplift.

It is not yet clear ultimately how successful this infrastructure development will be. So far the results are encouraging, but the benefits of this project flow far and wide in both the Toowoomba community and as an example to other infrastructure developers. John Wagner has broken the mould as to who should be an infrastructure developer. In doing so, he took back from government the primary role of deciding where infrastructure should be built and why.

With the risk of development being taken away, governments should exercise greater restraint with rules, regulations and wish lists for how new operators should run their investment. The innovation in how an infrastructure protagonist runs the assets is arguably even more important than the innovation required to create them in the first place.

Case study profile 2

Lang Hancock – Pilbara Rail
Pilbara Region, Western Australia

Innovators leave their mark on infrastructure for generations

Over the last 50 years, the Pilbara has proved to be one of the most successful economic development stories in Australia's history. The large-scale industrial complex of today's Pilbara iron ore industry belies the extremely humble beginnings of the region, with one man, Lang Hancock, leading a fight with the state and Australian governments to permit exploration, development and export of iron ore.

Not only did Hancock identify the ore bodies and appreciate their enormous potential, he had the determination to create a new export industry.

Hancock and fellow developers in the Pilbara were uncompromising in their pursuit of development and a desire to control their own destiny. This strongly influenced the proprietary nature of the rail infrastructure that was developed to support the iron ore projects in the Pilbara. The Pilbara rail system is one of the most efficient in the world.

Part IIIA of the Trade Practices Act, which creates access rights for third parties to proprietary infrastructure may reflect established historical practice in many jurisdictions and industries, but it is anathema to the highly vertically integrated production processes that characterise the Pilbara iron ore industry.

The strong desire for independence and ruthless competitive streak espoused by the founders of the industry remains in the Pilbara's region's collective DNA. The preference for vertical integration, self-reliance and the exclusion of third parties from infrastructure access in the Pilbara is as much about collective institutional culture as it is about economic efficiency.

Case study profile 3

Transfield and Kumagai Gumi – Sydney Harbour Tunnel
Sydney, New South Wales

Specialist skills and ownership matter
The ability to control risks and costs to deliver infrastructure that is beyond the capability of government features strongly in the Sydney Harbour Tunnel built by Transfield and Kumagai Gumi. Like Wagner and Hancock, Transfield was a strongly entrepreneurial family-centric business controlled by the Belgiorno-Nettis and Saltieri families, with an extraordinarily successful track record in a diverse range of engineering-related industries.

Transfield saw the opportunity to increase cross-harbour traffic capacity from Sydney's northern suburbs to the CBD that could not be achieved through changes to the Sydney Harbour Bridge. The company developed an underwater tunnel proposal based upon world's best engineering, planning and development practice that was well beyond the state's ability to plan or to accept risk. In addition, the developers took the financial risk on the project's ongoing success.

Sydney Harbour Tunnel was a clear-cut case of genuine risk transfer from the public to the private sector – it was a financial and development bargain between Transfield and the NSW Government in the truest sense and stands in very stark contrast to the obfuscation of genuine risk transfer found in many modern PPPs.

The Sydney Harbour Tunnel was Australia's first major build-own-operate-transfer (BOOT) project involving private sector infrastructure delivery.[5] Over the next 20 years, a series of spin-off private transactions took place in Sydney and other jurisdictions, such as Melbourne City Link, M2 (Sydney), M7 (Sydney), Lane Cove Tunnel (Sydney) and Connect East (Melbourne).

Case study profile 4

Beaumaris Sports Club Inc.
Melbourne, Victoria

News flash: the people might just know what they want
The concept of community is a critical component of infrastructure planning. Community provides the social licence for the private sector to access state resources, but can also play an active role in planning and procuring its own infrastructure needs.

Members of the Beaumaris Sports Club in Melbourne, Victoria, decided to take its destiny into their own hands. They built a new, combined sports and community facility to provide for their sporting needs and act as a catalyst for enhanced community involvement.

This club used forgotten financial techniques to tap their community's financial strength to raise capital necessary to develop the club. Together they coalesced the various levels of government and business support necessary to deliver an innovative facility.

But this is a more striking example of the extent to which a local community with a unity of purpose can evolve into an infrastructure protagonist. Its ethos is genuine community service, rather than profit and is based on volunteering, promoting financial sustainability and community participation.

'Community' will is often a tenuous concept that can shift radically in a short space of time. The bar to support these types of projects should be high, at the same time providing a self-financing component is very important, as it is a sign of community commitment and alignment of interests.

Most DIY infrastructure protagonists thrive on collaboration, or wither because of its absence. Government infrastructure procurement can be opaque, complex and not easily navigated. This is the antithesis of sound infrastructure governance, and can be most unhelpful in empowering community groups to be protagonists.

Refer to Appendix for full case studies.

Case study profile 5

Hepburn Community Wind Park Co-Operative Ltd
Hepburn Community Wind Farm
Daylesford, Victoria

Economies of scale are no friend of community infrastructure

The residents of Daylesford, Victoria developed their own wind farm as a public statement of their support for progressive climate change energy policies.

By adapting a localised, co-op style project, Daylesford came hard up against one of the real difficulties in economic infrastructure planning and development: the extremely high fixed project development costs required to complete the regulatory approvals process before construction and operation even starts.

Fortunately the Daylesford community found a commercial partner to fund the project development costs and provide technical expertise. This project was completed because a market existed for a commercial partner to provide its services for a profit even though it was a smaller project than was typically developed by private infrastructure investors.

Challenging the energy market

Distributed energy systems, Australia

The race (mostly) behind the meter

The transformation of energy has not really begun in Australia, but at the edges of the energy market there are many DIY infrastructure pragmatists who are restless with the status quo and are challenging the well-established norms on what is energy and how it is bought and sold.

This example is not about an individual person or firm, but instead describes a new cohort of entrepreneurs motivated by technological and social change. There is a clear expectation at play that energy can be produced, stored and traded more efficiently than the traditional central despatch that is mostly blind to the end customer.

These protagonists see how a distributed energy system will be equivalent to other upheavals like the advent of passenger motor vehicles, and the impact of refrigeration, which changed food production and distribution. Indeed, improved storage and reduced perishability of food opened up new trading platforms, including the Chicago Futures Exchange.

Energy production and despatch is changing. The consequences of battery storage at multiple levels of the value chain will be profound. Individuals and corporates alike will be able to aggregate and make their surplus energy substitutable and tradeable in both time and geography.

Energy is on the cusp of having its Uber and Kodak moment all in one and the people that are helping Australia make that happen come in many forms, from protagonists operating behind the meter to at-scale deployment of batteries to form the virtual power station and proprietary trading platforms

Table 1 outlines a sample of DIY infrastructure protagonists that are currently active in the energy market, but also are bringing together other disparate sectors such as for example transport, meteorology and life style.

Table 1: Sample of DIY energy protagonists in Australia

Companies	Name	What they do	Motivation	Ways and means to their vision	Expected impact
Green Sync	Phil Blythe	Manage distributed energy systems through software platforms.	Integrate renewable energy, battery storage and internet enabled devices into electricity markets around the world.	Software platforms enable customers to manage and control price volatility in energy markets.	Enable grid to accommodate increased renewables without disruptions to stability of supply.
Mojo Power	James Myatt	Development of distributed and customer focused technologies to enable consumers to go 'off market'.	Help customers better manage peak demand; obviate need for additional base load capacity.	Renewables generating capacity and batteries enabling distributed energy systems and virtual energy markets.	Achieve less capital intensive energy needs where data and behaviour are as important as electrons.
Power Ledger	Jemma Green	Enable customers to trade their own energy at times and prices that suit them.	Put the power to manage the energy economy into the hands of consumers.	Provide customers with transparent, auditable and automated market trading and clearing mechanism for their own energy.	Customers able to trade energy that they are not using at times and prices that suit them, enabling higher returns from investments.
Powershop	Ed McManus	Retail energy company allowing customers to choose when they buy power and what its source is.	Giving customers control of their power purchases.	Offers a range of products that give customers ability to control when they and who they buy power from.	Customers do not have to become locked into contracts which are unable to respond dynamically to personal circumstances.
Reposit Power	Dean Spaccavento	Software platform designed so customers can maximise their use of solar energy by combining with battery technology.	Applying expertise in grids and electricity systems to address gap in market with development of battery technology.	Software learns, adapts and predicts an individual's energy usage enabling solar use in evenings and minimising bills.	Consumption of solar in non-peak times addresses grid stability issues from some renewable energy.
Wattwatchers	Gavin Dietz	Real-time energy data and analytics.	Disrupt the regulated energy space; inform customer behaviour and investment decisions.	Using integrated analytics (household production and consumption), weather etc. to make informed choices.	Empowering customers through data and extracting value from smart meters to find their own unique energy solution.

Market led proposals

Assessing the vital signs of health of the DIY infrastructure markets are not easily done owing to lack of quality public data that describe their activities.[6]

State governments have been increasingly disposed to receiving 'market led proposals' from business and to some limited extent from community groups on major infrastructure and government service provision. This area is also referred to as 'Unsolicited proposals' in some jurisdictions.

Market led proposals need to be treated cautiously by government. Even though the development of unique proposals is likely to drive innovation, these benefits need to exceed those achieved through open competitive tendering.

Market led proposals imply significant government involvement in terms of regulatory permissions, financing or delivery oversight for example. Despite these they are originated from non-government (business, community) and are specific in terms of what is required of government. To that end, market led proposals are for the most part consistent with DIY infrastructure terminology of this paper.

Based on Better Infrastructure Initiative's research, it is estimated that over $30 billion of market led proposals have either been approved or progressed to an advanced stage of assessment over the period 2013-2017, including some of Australia's largest and most well-known infrastructure and real estate development projects as detailed in Table 2.

Table 2: Market led proposal summary

Year	Project	State	Sector	Proponent/s	Value (AUD millions)	Status
2016	Ausgrid	NSW	Energy	IFM, AustSuper	16,189	Completed
2013	NorthConnex	NSW	Tollroads	Transurban	3,000	Construction
2016	Wynyard Place	NSW	Transport	Brookfield	1,700	Construction
2016	Martin Place Station	NSW	Transport	Macquarie	2,000 (estimate)	Detailed proposal
2013	Crown Barangaroo	NSW	Casino	Crown Limited	2,000 (estimate)	Awarded
2016	Macquarie University Station	NSW	Transport	AMP Capital	941 (estimate)	Awarded
2014	CityLink Tulla Widening	Vic	Tollroads	Transurban	1,300	Construction
2015	Western Distributor	Vic	Tollroads	Transurban	5,500 (estimate)	Detailed proposal
2016	Logan Expressway	Qld	Tollroads	Transurban	512	Awarded

Source: Various Australian state government websites

Key aspects of the available information on market led proposals include:

- Victoria and NSW have a concentration of projects that are concerned with real estate development projects in their capital city central business districts or toll road development projects
- The AusGrid sale to IFM and AustSuper was completed under these provisions after the initial public sale process stalled once the Commonwealth Government ruled the foreign bidders ineligible. This is probably an atypical example as privatizations of this size need to be truly market tested to maximize sale price returns
- Strong focus on asset redevelopment where transport infrastructure is a component of a larger urban/CBD real estate development project, as evidenced in various Sydney metro train station projects at Wynyard, Martin Place and Macquarie Park
- Regional areas benefit has been much more limited, with little evidence of regional specific projects being considered for advancement under this process.

It appears that major proponents behind successful market led proposals are mainly large corporations and institutional investors. They appear most active and bring significant balance sheet capability to help manage the plethora of risks associated with major projects. This helps to underwrite development risk with large complex urban projects.

It is notable that small business and community groups do not appear to be using this process with any degree of success, and the reasons for this are unclear, although it is clear from the various literature provided by governments that they view the unsolicited proposals process as being focused upon game-changing projects that can significantly drive economic development within their state. That said, it is likely that the costs associated with preparing an unsolicited proposal, the uncertainty of the process and the intensity of the process is very demanding for which small and medium size businesses along with community groups are not well equipped to handle.

While the development of large-scale projects through a market led proposals process is to be encouraged, it could be strengthened by expanding diversity of proponents beyond large scale real estate development and toll road projects. Greater focus on community infrastructure and service delivery outcomes would help with broadening its appeal to other groups in the DIY infrastructure protagonist community.

Defining DIY protagonist

In light of this brief investigation of modern day infrastructure protagonists, some early patterns appear to emerge. These are important for government to better understand, so policymakers can more astutely tap their innovation and insight and help clear impediments so they can to better serve the future of infrastructure.

These characteristics are intended to help clarify the important and legitimate role the DIY customer and community protagonist plays in the system. This will allow policymakers, regulators and the investor community to act as an enabler in targeting the right infrastructure for customers and community.

Figure 1 summarises the key characteristics of the DIY infrastructure protagonists discussed below.

Characteristic 1: Personality + leadership

In every case example there is leadership and personality that underlies the power of getting things done. This positively encourages the support and belief of stakeholders that betterment is not only possible but is achievable in a relatively short time compared with the broader consensus of opinion.

Characteristic 2: Informed and contrarian

DIY infrastructure protagonists all bring an independent mind to the problem they are seeking to redress. The protagonist is committed to the idea they wish to champion, and will actively work around regulations to make it happen.

Their closeness to the problem and issues allow a more nuanced understanding of risk and how it can be mitigated. This close quarter engagement enables work through strategies not envisaged by stakeholders and institutional financiers that are remote from the situation.

Characteristic 3: Timing matters

Time is money, and the protagonist is astute as to the time required to activate and then apply their solution. Regulation and bureaucratic process can impede further progress unless they can see a way through to secure a short cut to make it happen.

The possibility of the many good ideas lost because the protagonist was not prepared to float the idea and challenge the system because of perceived red tape is when social welfare is most severely harmed. This in itself must be a motivator for genuine reform to better separate infrastructure 'lifters' from the 'leaners'.

Characteristic 4: Eyes on outcomes

DIY protagonists are mostly risk takers, with a clear demonstration that they are able and willing to put their money where their mouth is. The examples all suggest the accountability and focus on the long-term outcome is a defining trait.

While this is an encouraging and positive trait of the protagonist, when their idea has the potential to influence or change the performance of a large network (city transport, state electricity grid) then they will need significant capital, usually backed by institutional investors, to make it happen. This is evident with market-led (unsolicited bid) proposals.

Characteristic 5: Play the long game

The returns on investment for the DIY protagonists are typically more long term, with less of an expectation of a short-term gain. There is a strong sense of changing the system and creating positive spill over effects that could easily exceed a decade.

United States Senate Majority Leader Mitch McConnell summed up an essential trait of playing the long game: while patience and fortitude are important, he has always cared much more about moving the ball forward than about who gets the credit.[7]

For DIY protagonists short-term construction gains are simply a means to an end; that is improving productivity through access to markets; lower input costs, and generating the wider economic benefits.

Characteristic 6: Cash is king

Putting ideas into action requires cash, time and collaboration. Infrastructure is an expensive business, and will at times exceed the means of an individual, a local community and small business. The abundance of capital for financing provides no guarantees of support, especially where risk and uniqueness are high.

Empowering more DIY protagonists into the system can generate benefits in innovation and contestability of ideas, but this will require governments to be able to better facilitate and screen ideas quickly, efficiently, fairly and transparently.

Which is why market-led proposals provide an important framework for helping protagonists understand the rules and protocols that they can work within. Further development and expansion of these approaches to mainstream procurement is an important area for further reform.

Figure 1: Characteristics of the DIY infrastructure protagonist

Source: Better Infrastructure Initiative, John Grill Centre for Project Leadership

Characteristic 7: More from less

The performance issues of existing assets and networks, their regulation or contractual considerations were often a reason for DIY protagonists to spring into action.

Government can benefit greatly from DIY protagonists as they have the potential, through their actions and proposals, to contain valuable information not only for policy reform but also to unblock impediments to better performance and productivity.

Characteristic 8: Do it again?

Only a few of the DIY infrastructure protagonists had completed their original vision, and got to do it again with another intervention. Which means, for the most part, it appears as if their learning and motivation is not fully used.

This is a concerning observation and warrants further investigation.

Chapter 3 provides a more in-depth discussion of ways and means of empowering communities to be DIY infrastructure protagonists and of helping to unlock new opportunities for them to prosper.

Chapter highlights

- DIY infrastructure protagonists are a diverse group of market actors, but none of them are looking for fancy descriptions or titles, just a sense of satisfaction of getting the job done – being pragmatic, smarter and empowered.
- The development of the Brisbane West Wellcamp Airport in Toowoomba, Queensland, by the Wagner family is a classic and modern example of entrepreneurial insight and motivation overcoming bureaucratic gaps.
- Infrastructure protagonists summarised through their eight characteristics are important for government to better understand; policymakers can then more astutely tap their innovation, insight and clear impediments so they can better serve the future of infrastructure.

Chapter 3
Customer-led infrastructure starts at home

Across the diversity of DIY infrastructure protagonists described in earlier chapters, the opportunities for a more dynamic and vibrant contribution lies within reach, provided the nation's local communities could be constructively engaged.

The rich grassroots history of individuals and communities solving their own infrastructure challenges point to achievements that have served Australia well. It is important that communities can continue to fully activate resources to act on their convictions without unreasonable impediments.

Local government infrastructure neglect

Over the last century, governments have increasingly stepped in and taken on a substantial role in funding community infrastructure. As a result communities have largely been displaced from identifying and meeting their own community infrastructure needs as DIY protagonists.

The first order of challenge for local government is the systemic loss of funding that has accelerated the deterioration in budgets for necessary maintenance and community asset upgrades.

The Australian Local Government Association estimates that local councils across Australia are managing infrastructure in 2015 with a gross replacement value estimated in excess of $438 billion.[8]

Table 3 details the state of the asset base for local government. Overall there is an estimated $47 billion community infrastructure that is in poor to very poor state which requires renewal or upgrade.[9]

NSW has identified a total infrastructure backlog for all NSW councils estimated to be $7.4 billion, or over $1,000 per head of the NSW population, at 30 June 2012[10]; this is further compounded with growing populations and the impact of aging demographics.

Typical of much of the social infrastructure context in Australia, local government has suffered from less funding to maintain and renovate aging community infrastructure. The Australian Local Government Association estimated that when the Federal Government froze the indexation of Financial Assistance Grants until 2017–18, it permanently reduced funding to councils by more than $300 million annually.[11]

Constrains with funding to local government is forecast to continue[12] and therefore an important question is how can communities be more empowered as DIY protagonists without relying on government? This is discussed in the next section, along with a special focus on a development model for community sporting facilities.

Table 3: Local government infrastructure asset summary

		Classified as being poor – very poor asset condition	
Asset type	**Value (AUD billions)**	**Value (AUD billions)**	**Percentage**
Roads	73.7	8.2	11
Buildings and facilities	30.3	3.1	10
Parks and recreation	7.9	0.7	9
Storm water	33.3	3.1	9
Water and waste water	33.5	4.1	12
Airports and aerodromes	0.8	0.1	12

Source: Better Infrastructure Initiative, John Grill Centre taken from Australian Local Government Association National State of Assets 2015 based on survey of 230 local councils.

Box 1: Aging community infrastructure requires costly maintenance

Aquatic centres are an example of how important assets that contribute to the liveability of local communities are rapidly shifting into liabilities because of neglect.

The Victorian Auditor General noted there are 153 aquatic centres in Victoria built over 26 years ago, with 41 built over 50 years ago.[13] More than half of Victoria's aquatic centres are likely to be in need of repair, and can expect this to cost a typical council more than $1 million over the next four years.

Unfortunately, local government's hand-by-mouth financial existence does not place it in a good position to respond to not only aquatic centres but also a growing community consensus of the public health benefits of sport generally.

Aquatic centres appear to be only the tip of the impending community infrastructure crisis. It is estimated that $41.8 billion (40 per cent) of community infrastructure assets surveyed either require significant maintenance and, in some circumstances, replacement.[14]

In the spotlight: Community sporting facilities

DIY infrastructure protagonists are motivated to make a difference and can legitimately claim to be pioneers in impact investment by ensuring their interventions translate into substantive outcomes for their target customer and community groups.

Nationally, sport and recreation industries generate $12.8 billion in income.[13] Clearly it is a significant and mature industry but like many in the not for profit sector it has evolved without a sustainable long term funding and financing base.

Community sporting facilities are a powerful example of impact investing: seeking out new investment initiatives and innovation to support good long-term outcomes for communities. This can help prevent a loss of amenity and liveability while prudently avoiding a financial collision with an even more difficult budgetary situation in the future.

The provision of sporting facilities is an essential prerequisite for giving the community the option to participate in sport.[14] The simple act of being involved in sport has profound implications beyond the individual being active, and also for the broader community. Economists refer to these as 'externalities', where the act of being in sport generates wider economic benefits far beyond the sports field.

For example, apart from the direct benefits of having better physical and mental health outcomes in communities where sport is prevalent, it reduces incidences of obesity and type-2 diabetes. Less intensive medical interventions can free up resources to treat other chronic diseases.[15] There is a risk of a false economy in the sector where financially squeezing community assets in the pursuit of short-term gains, then invites significant long-term costs.

Organised community-based sport in Australia is significant. Around 6.5 million Australians participate, and 2.3 million people volunteer time for sport each year (the largest volunteer group in the country).[16]

Despite its importance there is no state or national register of information about the state of the nation's sporting facilities.[17] Beyond anecdotal and isolated data from local government and individual sporting codes, it is extremely difficult to make a state or national assessment of sporting facilities.[18]

Poor data availability and reporting on asset type and condition is compounding a potential ongoing policy failure; it also may be aiding and abetting the decline in funding without a full understanding of its consequences.

The escalating risk of declining asset standards coupled with potential negative impact on community health and wellbeing is emerging as a substantial problem. Without proper transparency for these issues, those that may be able and willing to help redress them are further frustrated. For example, DIY infrastructure protagonists can be frustrated in demonstrating their concerns because independent data are not available to mobilise resources to help fix the issue at hand.

Making room for community protagonists

The available evidence, including local government rate capping in some jurisdictions, suggests this sector will remain under financial pressure and will struggle to meet basic priorities.

It also implies that potential long term multiplier benefits (economic, social and environmental) from enhancing existing community infrastructure assets will be constrained by financial resources. In this environment the question is how can communities seek to solve their own problems without waiting for government? That is, can they become DIY infrastructure protagonists?

Australia has the enormous benefit that its communities are committed to making their suburbs and precincts great places to live and work. Chapter 2 provided an insight to the diversity of activities driven by passionate people and organisations. Making room for more community infrastructure protagonists is simply about just that; giving permission for existing government agencies to step back and allow new voices to make decisions and assume responsibility.

This concerns the steady loosening of the control levers of government and handing back power to the community where it is sought. Basically those that wish to do so should be able to, while other communities may prefer the status quo of government led infrastructure or even some hybrid variation.

Finding the middle ground where community groups can express and formulate their perspectives on needs and solutions is important. Equally, they should be motivated by the prospect that a well-developed proposal will be able to get a fair chance of financing.

The process of bringing out the community protagonists is unlikely to occur according to a pre-set formula, as the initiation of ideas and vision will differ greatly, as they should reflecting the diversity of Australian society. This rich array of community eco-systems already active in solving many important community challenges presents a real opportunity to further activate them towards seeking community infrastructure solutions with real financing and funding opportunities.

Unlocking community infrastructure protagonists, and who often present in the form of a not for profit entity, requires an understanding of the impediments that have acted to dissuade activity over the last few decades. The Productivity Commission's inquiry into the not-for-profit sector provides an important baseline in understanding impediments. The Commission found that while the not for profit sector contributed around $43 billion to the national economy there were significant impediments to accessing capital.[19] They identified five key areas that are lacking and are summarised below in Table 4. While sporting club are regularly mentioned these impediments apply to many other types of community groups as well.

Table 4: Addressing impediments to accessing capital for non-profit sector

Collateral to guarantee loans	Sporting clubs generally do not own the assets that they rely on. Without collateral sporting clubs are either unable to access debt financing, or access financing as unsecured creditors leading to higher debt costs and shorter term duration.
Reliable revenue stream to service debt	Sporting clubs are often subject to variable income due to the seasonal nature of their sport. Player registrations at the start of a season can often be the largest component of revenue. Diversifying and expanding revenue streams with new products and services would be helpful in financing debt more sustainably. Many clubs have endeavoured to diversify with fund raising activities such as bars, cafés and hosting functions.
High transaction costs relative to small capital required	Sporting clubs are often unable to access big institutional capital such as superannuation funds. They may be able to get access to these capital markets provided they develop organisational structures that can originate debt products that are suitable for superannuation funds to invest. Aggregating smaller tranches of debt into large parcels is highly beneficial to the community sector, as it helps to reduce the overall cost of the investment, and opens up scope for superannuation funds to invest back into their own communities.
Experience in developing sustainable business plans	Clubs and community groups could be more effective when there are professional managers working in collaboration with volunteers. Community volunteers bring a special alchemy of social cohesion and connection to their communities, however their most important contribution is shaping their organisation and ensuring their vision is acted upon. Professional managers can make these plans happen and be accountable to the community board.
Organisational structures to raise equity and debt	A challenge for sporting clubs is that they are owned by members and unable to issue share equity, without a change of laws. This deprives sporting clubs with one of the main avenues that corporations use to expand. No change means capital sources that clubs can use to develop are limited to cash grants and basic debt that has not served the sector that well.

Source: Summary from Productivity Commission Report, 2010

Community infrastructure ecosystem

Since the high-water mark of community-led DIY infrastructure during Australia's pioneering history, the nation has become much more complex. There are many innovative ways to activate the DIY infrastructure protagonists in communities but at the core of any ecosystem is the need to socialise and enable ideas and visions converge into scaled, feasible and viable plans, motivated by the possibility of securing finance.

Figure 2 sets out basic elements of the Community Infrastructure Ecosystem that is made up of:

1. **Community Infrastructure Hub**
2. **Community Capital Enterprise**
3. **Project management and delivery**

These are discussed below, and are intended to stimulate a conversation with stakeholders in order to better inform both a more refined model that fully reflects the core values, needs and aspirations of the community.

The Community Infrastructure Hub (CIH) is an environment for developing community ideas on projects and where individuals, groups and clubs can accelerate their ideas, join up with other like-minded groups and strengthen their collective ideas. It is also a meeting platform, both online and if appropriate physical, where participants can start to prepare business cases and early stage assessment for financing and funding readiness.

It is imperative the CIH is independent of government and commercial special interests, and would apply a purpose test to all proposals. The test would ensure CIH champions proposals that are highly beneficial to community outcomes, in other words that it generates over time wider economic, social and environmental benefits.

While independent of government, the CIH can help government agencies to understand the pipeline of ideas and needs and match protagonists with others that see benefit in working together to develop an intervention.

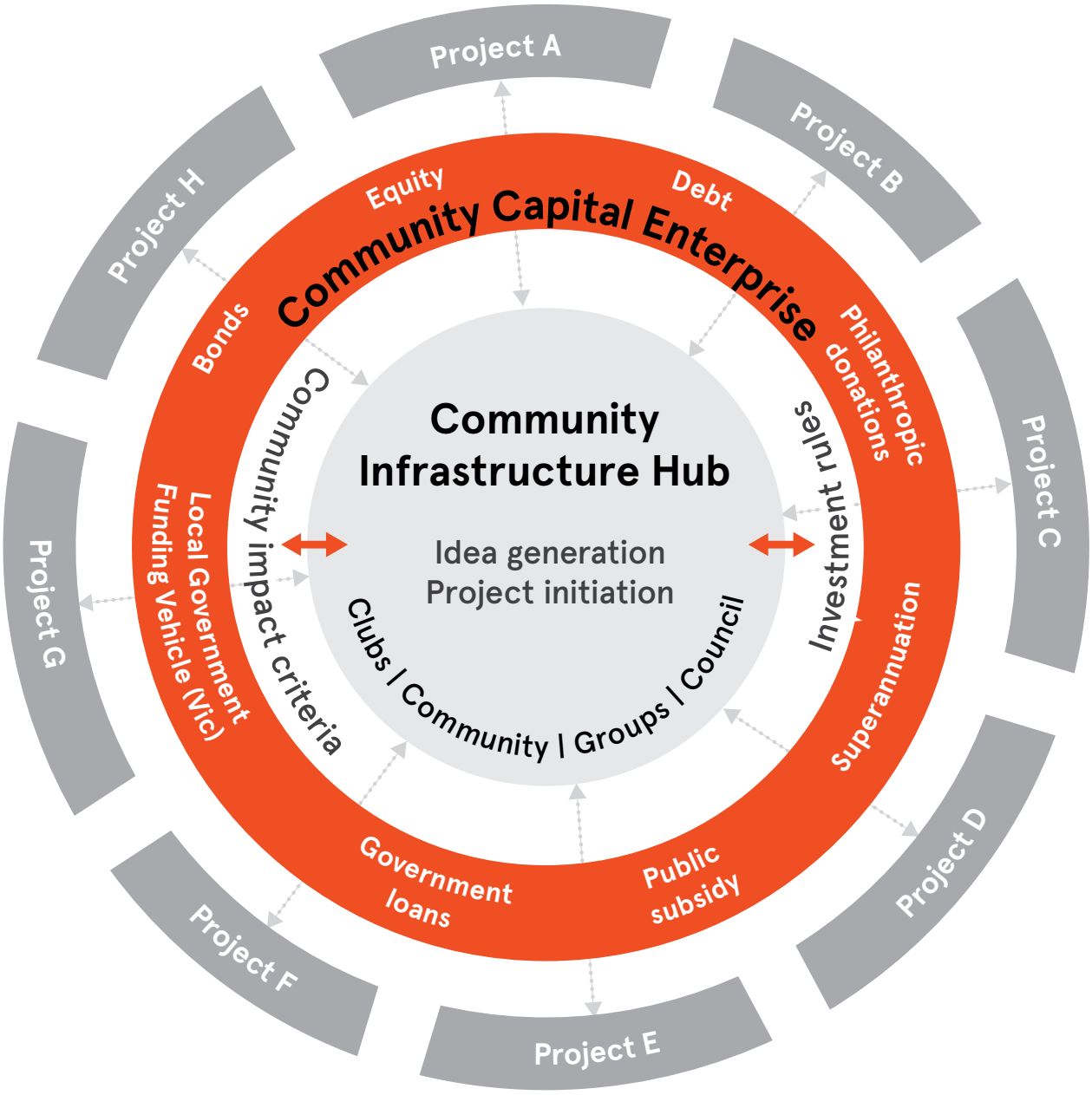
As a not-for-profit, owned by the community for the community, the CIH would benefit considerably from partnership programs through universities and TAFE colleges. It would operate at a regional level but with the capability to connect with other city and regional centres and aggregate up to a state and national level.

The CIH may be supplemented with learning and education programs intended to provide prospective community infrastructure protagonists with opportunities for face-to-face tuition to build the skills and capabilities of communities to unlock their own infrastructure needs and overcome challenges.

Community Capital Enterprise (CCE) is an important co-creation element for the ecosystem. Its mission and mandate is to help activate and realise community infrastructure protagonists' proposals that are generated and prioritised through the CIH; these are then aligned and further short listed with the criteria of the capital providers of the CCE.

The CCE is in essence providing a market-making function in so far as it enables transparency, independence, collaboration and financial rigour in accessing its variety of capital. What makes it a distinctive enterprise is that it is not only a place of innovation and customer-led financing and funding – and one which acknowledges the uniqueness and diversity of projects – but it also tries to fill gaps and ensure community impact and values are achieved in a rigorous credit assessment environment.

Figure 2: Community infrastructure ecosystem



Source: Better Infrastructure Initiative, John Grill Centre for Project Leadership

It is important the CCE is a champion of transparency, not only for good governance and decision-making, but also to serve as a demonstration (market signals) to prospective infrastructure protagonists as to what are the specific characteristics of successful proposal development. These market signals will be critical in actively developing and openly sharing expertise, knowledge and tools for the CIH.

Building substantial engagement with communities, sector experts, regulators and policymakers is important to the ecosystem, as is the ability to accelerate the plans of the infrastructure protagonists, even if that implies early failure. All outcomes are important market signals in the development of the community infrastructure ecosystem.

The CCE brings together for example institutions, philanthropic capital, private and public debt and equity that could be applied to community infrastructure development, and would invite capital pledges from these organisations. The capital pledges bring definition to a pool of finance and their contributors that has genuine interest and capacity to support new community infrastructure investments.

The vision is for the CCE to be a new investment market that has the potential to be valued in the order of $10 billion in 3-5 years, sourcing capital from, for example, banks, superfunds, sporting peak bodies, equity, philanthropic and other providers of capital.

The CCE would not take on financial risk but be a service provider that supports CIH protagonists to find their way to the best mix of financial solutions. Importantly there would not be one single, 'one size fits all' solution but a range of alternatives, including securitised debt, individual project financing and impact equity capital. The CCE would let different parties come together for different projects, or groups of projects, similar to how syndicated loan markets bring together different groups of banks on a project-by-project basis.

Government can and should play a role in the capital development, where it can bring investment capital (debt and equity) along with grant money that can be allocated to proposals that meet its specific criteria. There is scope for the CCE to assist with mixing and matching capital sources, including government money, to ensure projects meet given set of selection criteria.

Project management and delivery provides both assurance and oversight case-by-case. It ensures the capital is spent and the projects are delivered within the performance parameters of capital providers. Community protagonists would be closely involved in every stage of project management so their vision and expectations are reflected in this critical stage of delivery.

It is important the ecosystem is dynamic and benefits from contestable financing through the CCE, so that the CIH is a conduit to demonstrate successes and provides transparency on what works and why in attracting funding and finance from a variety of sources. This will help the ecosystem continue to be adaptable and help with the self-selection process for project selection and prioritisation.

It is imperative that the ecosystem is owned by the community and operates for the community, and therefore the BII will help facilitate a national dialogue with key stakeholders to further test its rationale, possible functions and form.

Box 2: Local Government Funding Vehicle

Local Government Victoria has had recent success working with local government to develop innovative ways to access finance on better terms and conditions. This provides a potential pathway for addressing some of the challenges of maintaining local government and community-owned assets. The Local Government Funding Vehicle (LGFV) has helped Victorian councils to tap global capital markets to finance long-term debt arising from obligations with their defined benefit superannuation schemes. By acting collectively, 33 Victorian councils were able to orchestrate a single but large bond issuance that allowed access to debt at much lower interest rates than would have been provided by banks had they done it individually.

A financial vehicle that aggregates projects and is similar to the structure established by the Local Government Funding Vehicle could be developed as another possible source to finance the development of community assets in a transparent and disciplined environment.

Chapter 4 connects the importance of dynamic communities and infrastructure protagonists with a discussion and critique of the drivers of economic growth. It examines whether the modern infrastructure governance model sufficiently enables the economy to fully extract the potential of the nation's infrastructure assets and networks, and the people behind them.

Chapter highlights

- The escalating risk of lower asset standards in the community infrastructure sector could potentially harm community health and wellbeing and bring with it more costly social and medical interventions in the longer term.
- Institutional issues preventing the community sector from fixing its own problems are plenty, and well analysed by the Productivity Commission. All are fixable with a better governance model without necessarily relying on government money.
- Poor data availability and reporting on community asset type and condition is compounding a potential ongoing policy failure; it also may be aiding and abetting declines in funding without a full understanding of its consequences.
- A Community Infrastructure Ecosystem is needed to activate the DIY infrastructure protagonists at grass roots of communities.
- The core of the ecosystem, a Community Infrastructure Hub is intended to help ignite project ideas, socialise them and enable their development into scaled, feasible and viable plans, motivated by the possibility of securing finance.
- A Community Capital Enterprise (CCE), the financing and funding arm of the ecosystem, is a new investment market for innovation and customer-led solutions mixing and matching with a variety of capital providers.
- The CCE has the potential to be valued in the order of $10 billion in 3-5 years.
- Business, universities and community sector must work together to consolidate their efforts and work collaboratively with government where it makes sense to do so.

Chapter 4
Finding growth in the customer

Customer-led DIY infrastructure as a national investment priority is a call for reform. It is to unleash innovation and agility to deliver infrastructure that is fit for purpose and renovate Australia's centralised, bureaucratic administrative arrangements which are less well suited to Australia's more nuanced needs and future dynamic challenges.

Competition and entrepreneurial dynamism are essential building blocks to growth and the DIY infrastructure protagonists. While they are just one group of many actors that make up the infrastructure sector, they are very important owing to their proximity to communities and their ability to innovate and mobilise resources. DIY protagonists help to make markets thrive as they add to the diversity of motivated actors that buy and sell from one another aided by the availability of clear signals from customers.

Data and transparency are critical to efficient market function. A great deal of that information load relies on high quality price discovery to inform demand and organise supply. Infrastructure has too little by way of price signals in some of its sectors, especially land transport to allocate demand in the peak and inform new capacity decisions. The DIY protagonists with their technology and innovation are helping redress this situation, and will be further helped with better customer engagement. These issues are discussed further in this chapter.

Predictable government

All infrastructure investment, regardless of how privately driven it is requires at different stages of the life cycle direct and indirect involvement of government. This collaboration between public and private sectors underwrites a very important social compact of the economy.

Ensuring a consistent and predictable policy and regulatory environment is very important to investor confidence in making long-term commitments. Without it, investors can and will hold back until the balance of risks justify future benefits. Indeed, governments need to ensure they avoid being chaotic and unpredictable as this can serve to exacerbate risk and prevent a clear line of sight to future opportunities.

Important areas of infrastructure such as energy, along with greenfield projects that have high complexity and risk with stakeholders, demands ongoing collaboration with government. It relies on government being predictable and consistent with their policy disposition and approach. Too often however this is not the case, and energy is an example where in some cases investors have not had the confidence to make long term commitments.

The role of pricing in powering up infrastructure services

Propagating the capacity of nations to discover new ideas, and then implement them is integral to high growth, social and economic progression. Disruption, contestability of ideas and competition to drive growth and dynamism are essential ingredients, but they can sit at odds with governments that by nature have a greater commitment to stability, reliability and preservation of the status quo.

The interplay between the competing priorities of protecting the status quo and reform to drive growth is key to unlocking and sustaining growth in most advanced western economies. Balancing these competing objectives is a challenge for Australia; the quality of this trade-off will determine not only the speed limit for long-term growth but also the social licence for reform.

Customer-led infrastructure protagonists, it is argued, are an important catalyst in economic growth. While some are successful and others less so, together their endeavours feed the discovery process for new ideas that can then be translated into market outcomes, lower costs for inputs and create access to new markets.

Infrastructure is more likely to be unlimited in terms of capacity and innovation when price is used to discover value. That is, to provide the means for interacting with customers in finding the new services and products that they value the most, and is willing to pay.

It is both government and business responsibility to help ensure infrastructure market design can move beyond the 'free and plenty' model for all in society. While admirable in concept, it is, however, flawed in practice because it creates deep inefficiencies in trying to satisfy demand that is unrestrained and uninformed about when to use it. It also distorts investment where often the only response to scarcity of infrastructure is to build more assets.

To get past the free and plenty model of infrastructure, the price mechanism urgently needs to do much more. Many sectors in infrastructure have achieved this, notably mobile and fixed line telephony, energy, water and waste, through a combination of corporatisation and privatisation. These sectors are not perfect, but rather their capital allocation decisions have been improved immensely compared with previous administrative processes that were opaque and suffered from political interference. However, the land transport sector in Australia has been mostly untouched by these reforms.

Pilot programs, innovate one step at a time

Introducing change to the existing infrastructure system by initiating major policy reform, new technology and ways of delivering services appears to be increasingly difficult as regulators and asset owners are often focused on reliability and predictability to ensure smooth running of critical infrastructure networks.

This is entirely understandable as transport, energy and water systems provide life support to cities, and a loss of reliability can have enormous and even catastrophic outcomes. Finding the balance between reliability and innovation so these life-giving systems can adapt and change as required is a policy and operational sweet spot that has been increasingly difficult to find.

Developing evidence through data and modelling that could help reassure policymakers that a reform or operational change would not create unintended consequences is an important benchmark for even the first layer of consideration of change. Data and evidence are often not available or reliable enough, which has been an impediment for DIY protagonists to help make their case for change. As a result, their proposals may be prematurely set-aside without being given proper consideration.

The freedom to innovate and compete forms the backbone of modern competitive economies, and having these conditions present in infrastructure is obviously important so all assets can contribute at maximum potential. It is from this perspective that infrastructure could benefit greatly from a program of experiments that give freedom for this to occur in certain markets or geographies, without risks of unintended consequences spreading to the broader network. Cliff Winston of the Brookings Institution[20] has discussed this extensively and provides an insightful framework for greater experimentation, particularly in transportation.

In the case of the United States, Winston argues that public sector ownership and management has continued to limit innovation and development of the broader transport system. For example, advances in GPS applications in highways and transit operations have been largely untapped.

Winston further argues that while there have been big leaps in the evolution of cars and trucks with technological advancement, little improvement in roads are evident. Public ownership of roads, and even PPP roads, have stymied innovation in private auto because roads do not communicate with vehicles, in ways that would improve traffic flow by changing traffic signals.[21]

There is significant potential for DIY customer protagonists to be more active in engaging with and challenging incumbent infrastructure owners, be they public or private, to innovate in favour of better services and more astute resource allocation.

Is capital fit for customers?

The perceived attractiveness of infrastructure among investors has led to increasing allocations to the asset class. However, despite the apparent abundance of private global capital available for investing in infrastructure, there is no guarantee that it will ever do so.

Over the last five years, the amount of dry powder, that is commitments that have been made to infrastructure that have not been filled, has increased from $65.8 billion in 2012 to $137 billion as of December 2016.[22] According to industry analyst Preqin, in 2017, 88 per cent of investors are expecting to commit either the same amount or more capital to the asset class in 2017 compared to 2016.[23]

John Maynard Keyes observed that the window of growth and prosperity since the 1700s is the product of technical progression, the people that can be inventive and the institutions that help to facilitate it. Research and education are cornerstones, but so are markets and having incentives to challenge, disrupt and create new ways of doing things that make us better off.

Could it be that capital abundance is the result of the success of yesterday, and that little comfort can be taken from this for the security and performance of tomorrow? To what extent then are the large capital pools that have been accumulated suitable for the task of supporting the drivers of economic growth associated with infrastructure?

The strength of demand for mature cash flow positive infrastructure assets has been evident by the historically high prices paid for maritime port assets and electricity distribution assets on the east coast of Australia.[24]

The multifaceted reasons behind this investor demand have been the subject of extensive discussion and analysis. These assets stand in contrast to the absence of investor appetite for projects that have construction, regulatory and patronage risks; such as greenfield toll roads and energy generation.

One explanation for the increase in demand for infrastructure assets is that institutional investors are seeking to escape the consequences of a low interest environment and are in search of higher cash yielding assets that come to market through asset recycling programs and privatisation.

The EDHEC (Ecole De Hautes Etudes Commerciales Du Nord) Infrastructure Institute-Singapore survey[25] provided the first in-depth global survey of institutional investors' perceptions and expectations of infrastructure investment. Half the survey respondents expected that infrastructure investment should be high yielding, while 28 per cent suggested it should be low yielding, generating long-term, stable returns.

Diversity of motives and objectives among institutional infrastructure investors is important in deepening the market and improving the efficiency of matching capital with the vast variety of projects and investments that are required.

When infrastructure assets have the latitude to interact with the customer to find new products and services (discover new value) along with the benefit of some component of the business with regulated revenue (stable, long term) then it appears to be a sweet spot for investors. Delivering value for customers is key to unlocking latent value across the infrastructure sector, and when this occurs there is a high likelihood of better yield along with an improved social licence that will permit further investments in viable projects.

Within the institutional investor cohort, some investors are embracing closeness to the asset, customer and community more than others. Those investors that seek to be closer to their assets and customers may help inform how new strategies can be developed that unlock higher yield, without exaggerating risk. This will be important in how the institutional investor class may evolve their strategies and what lessons can be taken from DIY protagonists.

Investors: reap the benefits of stepping up

There is enormous upside for nations that can be more customer-centred in detailing their infrastructure requirements. Australia has achieved considerable success with this as a result of some of the most profound reforms from the mid-1980s to the early 2000s. That is when both state and federal governments created an opportunity to shift away from cumbersome, inflexible and bureaucratic procedures for investing and managing major infrastructure to a more disciplined, fiduciary-based approach where rate of return on assets and customer service outcomes were key drivers.

Much of the utilities sector was reformed through corporatisation and privatisation. Airports were a major focus with the Airports Act 1996 establishing the regulatory framework for privatised airports.

Over the last twenty years most airports have been owned by institutional investors, including Australian superannuation funds, and have demonstrated world class capabilities to adapt to a changing aviation marketplace. Airports have been able to successfully manage a transition to low-cost carriers, building new terminals that have served new customers. They have also adapted to a new generation of aircraft, such as the Airbus A380 and Boeing 787 Dreamliner that required modifications to runways at Australian airports. In 2005, Melbourne Airport achieved a global first by widening the main 3.7km-long runway by 15 metres, and upgrading the entire runway lighting and guiding system within six weeks while keeping the airport operational.

Despite the clear success in managing critical infrastructure, investors should be further motivated in the task of unlocking the trust of the community and governments, not only for their own benefit but also to help with the efficiency and efficacy of Australia's infrastructure. Securing and maintaining the investor's social licence needs to be a core part of the investment process.

The next phase of the investor journey, which up until now has been first-rate in some sectors, is to break away from limiting their operational role as being compliant with the relevant regulatory reporting. This would mean that rather than only reporting information on asset performance through formal regulatory channels, investors would instead embrace open and transparent community reporting.

By taking a leadership position on community and customer asset reporting, investors can help set up the situation to address concerns expressed by critics of privatisation and asset recycling.

To do that, there is an opportunity for investors to step up and engage more strategically on the issues that matter to the jurisdictions they seek to invest in. Investors have an opportunity to do more for the communities they serve with customer- and community-centred infrastructure, and discover commercial upside of stronger community support.

Investors and asset operators should not give up on the aspiration that customers can be willing and enthusiastic funders of infrastructure. Examples of areas where investors and their operators could work with customers more diligently to improve service quality, manage risk and potentially achieve an outsize return include:

- toll roads where there is a lack of investment in smart technology to improve road to car communications that improves traffic flow,
- greater use of demand management incentives to reduce costs, share risks of peak energy supply, and
- data analytics across different assets to inform behaviour and enhance system wide performance.

The first step to discovering how to use this insight is by taking the time to interact and develop a compelling proposition for it that customers may value. Much of the existing infrastructure stock's significant latent value is at risk of being overlooked because it is locked up with regulation and contracts that do not easily facilitate fulfilment of customer needs over the long term. It is in no one's interest to see this situation continue.

A change of attitude and behaviour from investors can be potent in helping government do what is necessary to make more of the capital invested in infrastructure. This can also open up new assets and markets, achieve a re-rating of asset values and result in a more dynamic and happy customer, community and of course investor as well.

Role of business is to take risk

There is a great deal of focus on the role that superannuation and pension funds play investing in infrastructure. As superannuation and pension funds increasingly allocate to unlisted infrastructure, it is important to note that most infrastructure assets are still owned through listed equity markets.

The role of superannuation investment in infrastructure was the subject of submissions to the recent Murray Financial System Inquiry, with the Australian Centre for Financial Studies arguing that superannuation funds are not equipped to meet the full breadth of national infrastructure investment needs. This is because they were established as a vehicle for investment in existing financial assets rather than creators of new financial assets associated with new real investment opportunities.

In the debate about the role of superannuation funds it is important not to lose sight of the role the business sector plays in infrastructure. According to industry analysts, as at 31 December 2015, institutional investors globally owned $600 billion of infrastructure assets in unlisted vehicles.[26] In comparison, the MSCI ACWI Infrastructure Index, which consists of the world's largest listed equity investments, was valued at $2,747 billion in January 2016.[27]

Listed equity markets, and not direct investments by superannuation and pension funds in unlisted infrastructure, are still where most non-government infrastructure assets are owned.

Chapter 5 takes a closer look at what can be done to strengthen the DIY protagonists' existence, and how an even greater diversity of contributors can join in helping to resolve the great infrastructure challenges of the 21st and 22nd centuries.

Chapter highlights

- DIY infrastructure protagonists are an important catalyst in economic growth: propagating the capacity of nations to discover new ideas, and then implementing them is a cornerstone of social and economic progression.
- Despite the apparent abundance of private global capital available for investing in infrastructure there is no guarantee that it will ever do so.
- There is an opportunity for active investors to step up and engage more strategically on the issues that matter to the jurisdictions they seek to invest in. Investors have an opportunity to tap significant latent 'yield' by doing more for the communities they serve with customer- and community-centred infrastructure.

Chapter 5
The future starts today

The infrastructure ecosystem of people, institutions and the resources it uses are subject to all the same laws of health, resilience and productivity of any other living system.

Biodiversity is an important objective and principle of our environment for good reason. That is because it boosts ecosystem productivity where each species, no matter how small, contributes to making an ecosystem function. For example, a larger number of plant species supports a greater variety of wildlife. Greater species diversity ensures natural sustainability for all life forms.

For the same reason, DIY infrastructure protagonists and the many forms that they present are an essential building block of the infrastructure ecosystem. Their uniqueness stems from the necessity for change, and to counterbalance big centrally governed networks. Just like any ecosystem, the infrastructure community is more likely to be productive, purposeful and adaptable when there are more participants, rather than fewer.

Competition and innovation is central to successfully engaging the customer.

Customers having their way, despite monopolies

As a nation with a large geography and relatively small population it is of little surprise that much of Australia's infrastructure is heavily concentrated with a few large, dominant and regulated entities.

Capital has been scarce compared to the size of the infrastructure task and much of it was mobilised through regulated monopolies. Energy, water, telecommunications and transport all have their roots in monopoly structures, where price protections were afforded, along with minimum service standards and universal access principles.

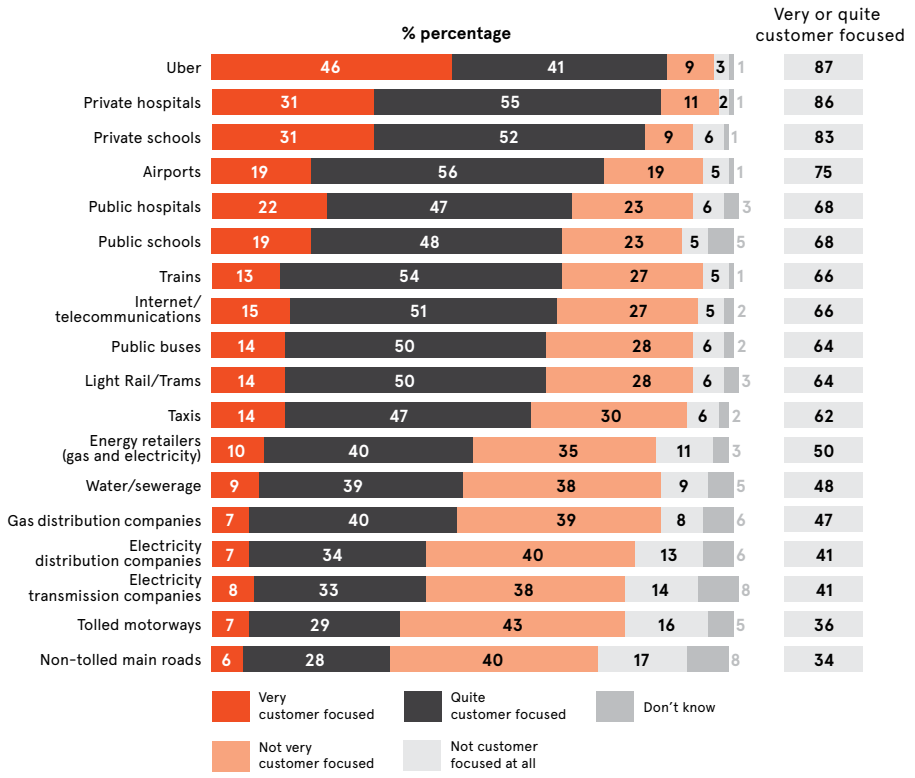
Sensitivity to customer needs and dynamic relationships for innovation in product and service development are rarely associated with monopolies. Somewhat ironically, despite extensive safeguards put in place to protect customers against adverse monopoly behaviour, the plight of the infrastructure customer remains tenuous and in need of strengthening.

Importantly, new signs of customer engagement are emerging despite the continued existence of monopolies and regulation.

Technology is inviting disruption from a new breed of DIY infrastructure protagonists that are actively defying the will of monopolists and bureaucrats. Many earlier protagonists were prosecuted and outlawed for challenging the status quo, but social media and online platforms like Uber and Airbnb have made them more potent, well financed and willing to challenge the system at scale.

Figure 3: Current customer focus of operators

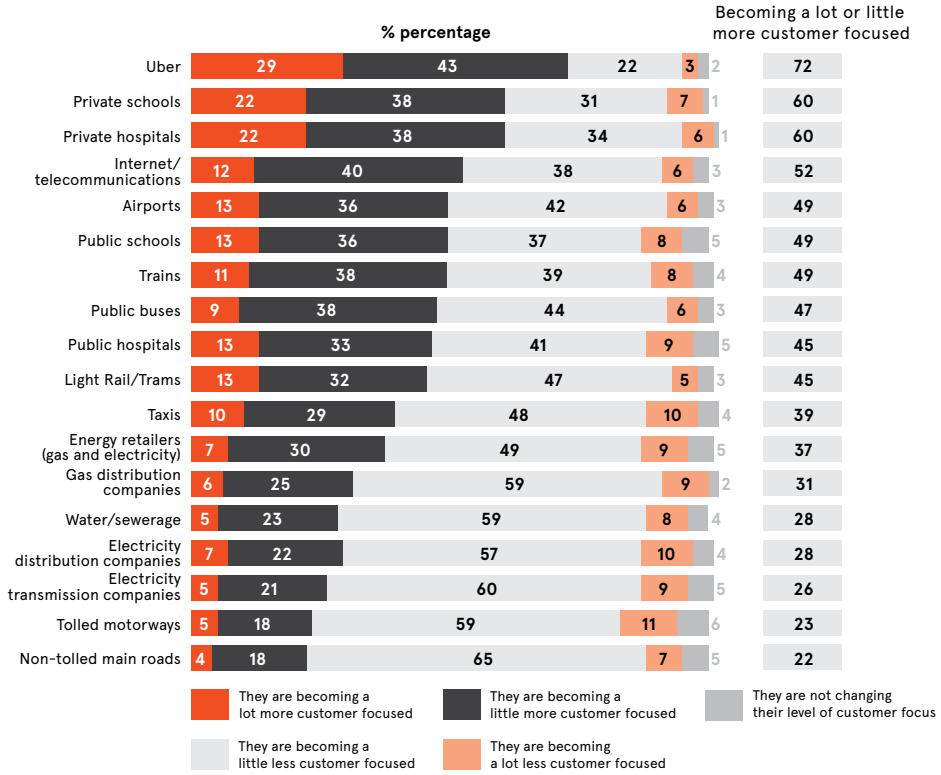
Q: How customer focused are the operators of the following types?



Source: Newgate Research (2016), commissioned by John Grill Centre for Project Leadership's Better Infrastructure Initiative.

Figure 4: Becoming more customer oriented

Q: Do you feel the following infrastructure and transport operators are changing when it comes to their level of customer focus?



Source: Newgate Research (2016), commissioned by John Grill Centre for Project Leadership's Better Infrastructure Initiative.

This is an important development that has seen governments review their regulatory position, and question whether in fact they have the will to back regulations with enforcement, or whether instead to abolish regulations to allow for new entrants with a greater prospect of more dynamic service delivery.

The Better Infrastructure Initiative examined the experience of the infrastructure customer in more detail in an online survey of over 1000 Australians. It explored the extent to which the operators of different types of infrastructure and services across 18 industry categories are seen as customer focused.

Figures 3 and 4 set out the high level results of the survey.

- Uber was rated as being very or quite customer focused by 87 per cent of its customers, followed by private hospitals (86 per cent), private schools (83 per cent), airports (75 per cent), public hospitals (68 per cent) and public schools (68 per cent).
- Tolled motorways (36 per cent), non-tolled main roads (34 per cent), electricity distributors and transmission companies (both 41 per cent), gas distributors (47 per cent) and water and sewerage companies (48 per cent) were perceived to have the lowest customer focus among the sectors tested.

Overall the survey data[28] provide important clues as to how governments can make the most of the presence of DIY infrastructure protagonists to complement existing infrastructure and incumbent operators.

While the lowest customer satisfaction ratings were concerned with roads, the highest ratings for Uber provide a dramatic contrast in perception. This is particularly so when roads are Uber's most important physical input.

It appears Uber's smart phone app provides the customer with a greater capacity to be informed, not only about car, driver and costs, but also when and where are the best times to travel. Empowerment through transparent information via a smart phone app appears to be a catalyst for shifting perceptions of satisfaction without any material change in the investment in the physical roads or levels of congestion.

An important enabler for the innovation that a DIY protagonist can create in this arena is having open and transparent data that invite ideas and new services, supplemented with strong customer feedback. While the physical infrastructure is relatively static, dynamic opportunities are abundant in the services and soft systems that turn data into information that coexist with assets. This is an area for governments to better understand and encourage broader and more dynamic participation with the full force of market-based competition.

Outsize returns, with customer approval

Infrastructure is an attractive and valuable asset for investors because it provides essential services to the community for long periods of time. By the same token, there is limited benefit in having infrastructure assets and services that resist change over their long economic lives, particularly as technology and social need shifts. In these circumstances, infrastructure customers can risk enduring declining service standards compared with the rest of the economy where competition and innovation is less constrained.

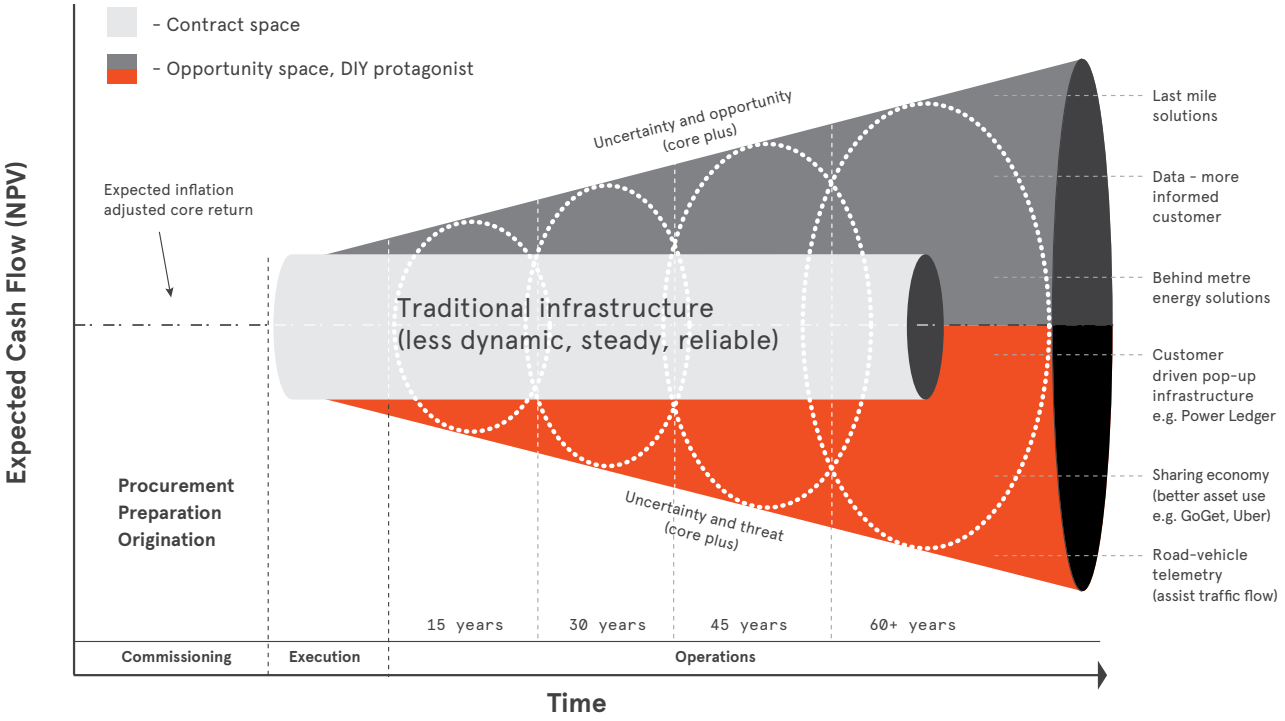
Investors in infrastructure come to the asset class with a range of motivations. Those that seek a relatively safe haven of low risk and commensurate returns do so with a preference for regulated assets, where competition and change are minimal. Their involvement is relatively passive compared with an open and competitive market.

Opportunities for outsize returns more commonly occur on the fringe of the traditional core infrastructure asset definition. Opportunities to add on instruments for greater risk and therefore greater scope for return could also be achieved by 'actively' engaging with the customers. Developing new value propositions for different customer groups is a valuable way to build out infrastructure from its traditional physical asset focus. In doing so, it invites the adoption of new technologies that enhance or even shifts services to meet new or emerging needs and wants.

Without a stronger 'core plus' culture in infrastructure, there is a concern that traditionally managed infrastructure may result in a systemic decline in service standards.[29] Not only will this detract from customer experience, but also diminish the customers' and community's perception of the infrastructure owner.

Avoiding such an outcome demands a cultural shift in favour of customers and wherever possible to resolve this through markets. DIY protagonists provide an important lead for traditional asset owners to be more motivated in engaging and adapting to customers.

Figure 5: Better Infrastructure Futures Framework (BIFF) – Opportunity space for DIY protagonist



Source: Better Infrastructure Initiative, John Grill Centre for Project Leadership

The concept of a Better Infrastructure Futures Framework (BIFF) is detailed in Figure 5. It is intended to help inform policymakers, investors and the community to better understand the importance of all infrastructures to move outside of the traditional regulatory and contractual boundaries in finding new value with customers. DIY protagonists, while sometimes viewed as a competitive threat to incumbents provide vital information and challenges to the system to self improve, without government supervision.

An absence of data, information and supporting transparency on the performance of infrastructure assets with respect to customers is emerging as a serious issue. Furthermore, the situation could be helped by governments that undertake timely regulatory review to adapt to new technology and legislative requirements to allow access to information about service quality performance.

Redressing these issues will help consolidate positive change already underway, and spur on widespread reform in culture, incentives and behaviours in favour of customers. Government can and should support and reward better infrastructure investor stewardship with their policy and regulatory settings.

Making system-wide benefits

The most system aware stakeholder in infrastructure is most likely to be the customer. There is surprisingly limited research and evidence about this; however, it stands to reason that customers rely most profoundly on the systems of infrastructure to work together. For example, water to make electricity; electricity to pressurise water reticulation networks; telecommunication to connect water, energy and transport. These interactions are seemingly endless, but governance to enhance system wide performance remains weak.

Clearly no infrastructure project should ever be planned and delivered in isolation as businesses and communities are completely reliant on these interdependencies to drive living standards, public safety, future economic wellbeing and confidence.

But policymakers have found it exceedingly difficult to embrace system-wide planning and management. Part of the problem is that the machinery of government is segmented into functional areas that ensure a practical focus on specific asset and direct services in isolation, for example transport, energy, health and education.

Although this emphasis is needed to run the different functions of the infrastructure subsystems safely and efficiently, at its core this process is largely concerned with technical efficiency (reliability and costs) using engineering-based performance measures.

An engineering and functional focus needs to be further developed with complementary measures and indicators that first champions system-wide awareness and then incentives to reward decisions that are beneficial to the whole system. To do this requires governments to be prepared to ask difficult questions such as, 'how can we judge when an infrastructure system is accretive to customer and user satisfaction?'

Answers to these questions will be helpful in redesigning infrastructure decision-making and governance models with a more consistent approach to system-wide stewardship. When this is better understood, all owners, operators and government agencies can then be motivated. For example, where market design instils clear objectives and incentives that help reinforce behaviours that fit with system-wide performance excellence.

For example, governments have expressed an aspiration for Australia's major cities to be 30-minute cities[30] that is no matter where you live, you can easily access the places you need to visit daily within that time envelope.

While this is an admirable objective, for it to be taken seriously will require not only long-term planning but also an entire new systems thinking culture that has evaded governments to date.

Which transport modes (road, rail and even air) should enter system thinking is important but is only a first step. Such a functional approach would quickly face constraints not only in terms of money but also physical space for the additional roads and rail corridors to accommodate peak period demand. Instead, a system-wide approach would embrace how to better manage the demand for mobility to work and leisure destinations through, for example, land use planning instruments, managing school and retail hours, and pricing for the opportunity cost of transport scarcity in peak periods.

These things are not easy, yet this is exactly what customers and the community expect so they can benefit from the performance of the whole system. That means focusing much more policy and technical effort on the shared boundaries that together are what defines how the network affects the amenity of the entire system. As policymakers rarely do this, their project-centric approaches can help contribute to project failure because they have not taken proper account for system-wide impacts.

To achieve a higher level of system awareness among policymakers, owners and operators of infrastructure need to focus on those that rely most up on it – customers and the community. Their insights, priorities and requirements may not fall neatly into the strict functional silos of government but this is exactly where change is needed.

In essence, there is an urgent need to build on the high level of excellence in the management of the subsystems of infrastructure (electricity, water, waste, rail, roads) to achieve a higher level of assurance towards the stewardship of system-wide outcomes.

For example, governance improvements in corporate finance were set up for highly competitive divisions in companies that were seeking to optimise their individual performance but were doing so at the cost of the overall company. Goldman Sachs was a case in point some decades ago, but managed to find a solution that bonuses were not paid unless the overall share price of the firm increased. The salient point is that a measurement was developed and used to capture system-wide performance to align system outcomes to individual divisions (sub-systems).

At this stage, infrastructure is missing critical governance data to unify and consolidate its diverse subsystems into a coherent one. Its exact nature will require further research, however customer perceptions and satisfaction may provide important insights as to how it could help shape a more system wide culture and stewardship of all parties involved in the infrastructure system.

As was discussed in Policy Outlook Paper No. 2, governments' ongoing interest in PPPs has served to further encourage a narrow and inflexible perspective. The Cross City Tunnel in Sydney was a clear example of this narrow thinking, where many were caught unaware by the community's opprobrium. Policymakers should not be surprised when a new toll road's commercial success depends upon reducing the amenity of the existing adjacent road network, as was the case in this situation.

Compounding the problem further is how the narrow perspective of individual projects and their governing contracts, as well as, some types of privatisation have encouraged private owners to seek out consistent returns. Government vendors usually 'manage' this risk by constraining future system flexibility; precisely the opposite of what the intelligent customer-centred system or network should be seeking to deliver.

Customer-led infrastructure

The Better Infrastructure Initiative continues to question the degree to which the customer (and community) voice is not only heard but also listened to. How might this change overtime and what are the new and old channels that could enhance the infrastructure governance of hearing their voice and acting on it with purpose and conviction?

It is obvious that every piece of future infrastructure has its customers but what is missing is a platform to empower their voices to shape its current and future services. That is why the role of the DIY infrastructure protagonist is a critical prelude to the Policy Outlook Paper No. 4, which will be concerned with the ways and means of activating the community and customers to act out their infrastructure convictions and to better guide the government and private sector's investment decision.

It is important for asset owners and they're appointed operators to make customer stewardship more transparent so as to drive new products and services, innovation and a richer and deeper social licence for private and public sector investment.

Chapter highlights

- Like any ecosystem, the infrastructure community is more likely to be productive, purposeful and adaptable when there are more participants, rather than just a few.
- Technology is inviting disruption from a new breed of DIY infrastructure protagonists that are actively defying the will of monopolists and bureaucrats.
- DIY protagonists, while sometimes viewed as a competitive threat to incumbents provide vital information and challenges to the system to self improve, without government supervision.
- Declining service standards and innovation can be arrested when DIY protagonists get involved, as they explore opportunities in ways that traditional asset owners and concession holders do not.
- Infrastructure only really works well when it is part of a connected system. Roads connect to hospitals, electricity and water are highly interdependent, land use dictates the performance of transport. DIY protagonists help make the system perform better by operating on the edge of regulation as disrupters.
- Shifting the focus of infrastructure owners, managers and regulators towards not only higher levels of system awareness, but also to aligning their behavior to it is an important next iteration in the reform agenda

Chapter 6
Final remarks

The motivation and challenge for this paper was two-fold. The Better Infrastructure Initiative has concerns that:

1. **Dynamism and innovation**, key ingredients for economic growth and social progression, while present in many parts of the economy need to be further developed across much of infrastructure.

2. **The customer and community voices** in infrastructure governance need to be strengthened to help with better project identification and origination and attenuate risks where misallocation of public money results in doing wrong projects at the wrong time.

Customer-led DIY infrastructure is a national investment priority. It is a call to un-limit the nation's assets and services to greater dynamism and entrepreneurial uplift. Australia has a rich history of DIY infrastructure protagonists where their legacies are scattered across the vastness of Australia's landscape.

Changes from new technology and escalating community preferences for energy, transport, water and waste highlight that infrastructure in the 21st century is shifting to where services, data and choice are the new levers of enduring growth, quality jobs and opportunity.

But the nation has more to do in readying itself for this future.

Unlocking more economic growth with dynamism, enterprise and social cohesion can be done, especially by accessing and liberating deep talents, skills and collaboration capacities that are abundant in the Australian community.

Tapping the full potential of these protagonists will require Australia to improve the quality of data and transparency of decision-making across every aspect of infrastructure. Markets are empowered by information, and their efficiency is determined by it. So it is no surprise that this is also what activates DIY protagonists to have a clear line of sight to gaps, bottlenecks and under performance that can be remedied.

It is time to strengthen the infrastructure ecosystem with more community and business protagonists as the epicentre of a new decision making model. Its objective is to marshal infrastructure investment and the rapid realisation of better services, new markets and higher productivity; the alchemy of why investment occurs in infrastructure in the first place.

Enabling the DIY infrastructure protagonist to do more is one very important step for Australia to fully grasp the economic and social opportunities before it.

Unlocking more economic growth with dynamism, enterprise and social cohesion can be done, especially by accessing and liberating deep talents, skills and collaboration capacities that are abundant in the Australian community.

Appendix
Infrastructure protagonist profiles

Case study 1: Brisbane West Wellcamp Airport

Protagonist: John Wagner and family, Wagners
Domain: Real estate and aviation
Where: Toowoomba, Queensland (130km west Brisbane)
When: April 2013 – November 2014

The opportunity
Develop the first international civil aviation airport in Australia for over 50 years. The transport hub will service one of Australia's largest regional centres, with airport facilities and 2,870 metres runway capable of taking 747-800 aircraft.

Motivation
Enhance investment attractiveness for Wellcamp Business Park, owned by the Wagner family.
They were having trouble attracting international investors owing to its distance from Brisbane, poor access for business travellers and inferior air connectivity. This was despite Toowoomba being Australia's second biggest inland city that sits in the middle of the biggest agricultural regions in Australia. It is a large service provider to the Surat Bowen copper and soon to be Galilee basins. It also has a big health and education sector and with poor aviation connectivity.

Source of capital
The Wagner family balance sheet financed 100 per cent of the development that totalled around $200 million. No government money was provided. As there were no customers when the project began, and therefore zero projected revenue, the banks did not provide any capital for the Wellcamp Airport.
Impediments/success

The Wagner's optimism and appetite to invest in aviation contrasted dramatically with expert opinion at the time. While this served to ensure there was little competitive tension from other protagonists, it also meant that investors and other stakeholders were at best neutral to the development. That said, it appears community support for the project was strong, as well as the local media suggesting the Wagner's had prepared and networked with the community to ensure support.

Regulation was a potential Achilles' heel for the Wagners. While there were risks, the Toowoomba Regional Council deemed their development application 'code assessable'. This was critical, as it would mean the project was fast tracked and could therefore proceed without an environmental impact statement or community objections being tabled.

Timing was very important to the project development, as the Wagners optimised planning processes that emerged during council mergers in Queensland. The pre-amalgamation planning code that was conducive to the airport development remained in force until the start of 2012–13 financial year. The merged council would have required extensive community consultation and environmental assessment that could have delayed the project and potentially tipped the Wagners into not proceeding.

Unexpected outcomes
John Wagner says there were no particular surprises with the delivery and now the operation of Wellcamp Airport. It was delivered on budget and on schedule in 19 months and 11 days.

Contrary to the expectations of others, the airport has been cash positive for almost the past 12 months, with the only 747-800 jet freight service operating in Queensland.

One area that has been a cause of surprise for John Wagner is the way the airport has boosted community confidence in investor activity that has been to the benefit of Wellcamp and the broader community.

Case study 2: Pilbara Rail

Protagonist: Lang Hancock & partners, BHP Billiton and Rio Tinto
Domain: Propriety rail network
Where: Pilbara, Western Australia
When: 1962–present

The opportunity

Lang Hancock discovered iron ore in the Pilbara in the early 1950s. It, however, lay dormant for over 10 years until both the Commonwealth and the Western Australian governments lifted regulatory restrictions on the export of iron ore and private tenement granting that had been in place since World War II.[31]

These initial projects in the Pilbara required the development of some of the world's largest iron ore mines as well as dedicated rail links connecting the mines with newly constructed ports at Dampier and Port Hedland. The rail developments were undertaken privately as a part of the vertically integrated production and logistics controlled and managed by the developers Lang Hancock and partners, Rio Tinto and BHP Billiton.

Motivation

Scale of operations

The enormous size of each of the Pilbara iron ore operations and the scalability of the resources means that not only were there large amounts of rail capacity to service their initial export contracts, but that unfettered additional rail capacity was required. Eliminating logistical bottlenecks as supply rapidly expanded to meet additional international demand was crucial.

Geographic isolation

The enormous size of each of the individual iron ore developments, the dispersed nature of the initial projects under different ownership and the extraordinary physical demands required of the rail service to meet individual corporate export requirements meant there was no clear pathway for shared infrastructure. Operational flexibility through vertical integration of the production and logistics chain was more highly valued by operators than potentially lower access costs.

Entrepreneurial culture

The developers of the Pilbara were strongly entrepreneurial and fiercely independent and resisted the interference of government or third parties in their operations. Attempts to create third party access to rail infrastructure in the Pilbara although legally permitted have failed. Fortescue Metals Group has since developed its own rail network and is now resisting Brockman Resources' attempts to gain access to its lines under Part IIIA.

Source of capital

- Mt Newman and Goldsworthy (BHP Billiton), Hamersley Iron and Robe River (Rio Tinto) projects were financed by equity provided by BHP, Rio Tinto or their antecedent corporate entities.
- Fortescue is owned and financed by equity provided by Fortescue Metals Group and debt provided by local and international debt capital markets investors.
- Roy Hill is owned by Hancock Prospecting Pty Ltd and its partners POSCO, Marubeni and China Steel Corporation.

Impediments/success

The Pilbara is one of the world's most isolated and inhospitable natural environments. These foundation iron ore projects were thousands of kilometres away from significant population centres or anything capable of providing large-scale development support.

Before development, large sections of the Pilbara and Kimberley did not have access to bitumen roads or landing strips capable of supporting light aircraft. Mine development included the planning and commissioning of almost every other aspect of supporting infrastructure, including roads, rail and ports necessary to deliver iron ore product to client markets in Japan and Korea.

The Pilbara is one of the world's great mining success stories, with over half a century of unbroken expansion and profitability and a track record of successful adaptation of extraction and infrastructure methods that have been constantly refined, reinvented and redeveloped as market conditions dictate.

Unexpected outcomes

- The introduction of Part IIIA of the Trade Practices Act 1974 (Commonwealth) grants power to the Minister to declare certain infrastructure assets eligible for open access agreements by third parties where it would not be economically feasible to develop alternative infrastructure.
- While the shared access arrangements reflected established market practice in rail systems in industries such as the East Coast coal sector, as described previously the physical separation and rapid development pathway of the various foundation Pilbara projects means a very different infrastructure access regime philosophy developed in Western Australia that is highly resistant to sharing infrastructure.[32]
- Fortescue Metals Group pursued Rio Tinto for access to the Hamersley and Robe River rail lines to transport its product. However, it eventually decided to develop its own rail facilities after a fruitless ten years where it won virtually every preliminary court case supporting its third party access rights under Part IIIA, but ultimately lost its case for access upon review by the Australian Competition Tribunal.[33] Fortescue opted to build its own rail line during favourable market conditions rather than risk further delays in trying to negotiate workable access agreements with the incumbent parties and ultimately losing their legal claims for third party access.

Case study 3: Sydney Harbour Tunnel

Protagonist: Transfield Limited/Kumagai Gumi
Domain: PPP roads
Where: Central Sydney
When: Project awarded 1988, completed 1992

The opportunity

Developing a second crossing of the Sydney Harbour for motor vehicles connecting the Sydney CBD with the northern suburbs of Sydney. It was an underground corridor to complement the Sydney Harbour Bridge, which was completed in 1932.

The Sydney Harbour Bridge was operating at capacity with few practical options to expand its capacity due to its iconic design and its immense value to the Sydney skyline and built environment.

The level of technical risks associated with developing an underground tunnel underwater in a densely populated harbour region was too great for government given its limited underwater engineering capability and technical delivery capacity.

Motivation

The proposal was developed by the partners to solve a vitally necessary expansion of the metropolitan road network that was beyond the government's technical capabilities.

The partners' principal insight in to the development of this proposal was they appreciated the fundamental risks associated with the project's delivery and operation were engineering-based. However, the partners were confident they could build a complex underwater road tunnel that would be supported by traffic demand that could not be serviced by an expansion of the Sydney Harbour Bridge.

Source of capital

The Sydney Harbour Tunnel was an unsolicited proposal from partners Transfield and Kumigai Gumi (Japan) and privately funded under a 25-year build-own-operate-transfer (BOOT) contract awarded by the NSW Government.

The Sydney Harbour Tunnel was equity funded by Transfield and Kumagai Gumi, with debt financing provided by a syndicate of Australian and international banks with total capital costs of $750 million.

Impediments/success

The project was the first major private BOOT project PPP in Australia; significant technical, construction and patronage risk was underwritten by its project proponents.

The Sydney Harbour Tunnel was completed in 1992, and opened on time and within budget. It was successful from inception, with some 90,000 cars using the road daily.

The NSW Government did not have an established policy or organisational framework for dealing with PPP projects of this nature, with these assets usually being completed under design and construct contracts with engineers and contractors. The processes and policies developed by NSW for the Sydney Harbour Tunnel were highly influential in the creation of similar units in Australia and around the world.

Unexpected outcomes

NSW used the success of the Sydney Harbour Tunnel model and this model of PPPs to commission further BOOT road projects with mixed success, such as the M2 Hills Motorway, M7 Ring Road, Cross City Tunnel, Lane Cove Tunnel and NorthConnex.

Victoria also used this model to develop the Melbourne CityLink project. Its operating entity, Transurban, is now an ASX 20 company with assets in NSW, Victoria, Queensland and the USA.

The surprise is that Transfield/Kumagai Gumi, the project partners, did not parlay its success into a broad expansion of its BOOT road project portfolio, but instead it remains their single, most well-known asset even with only five years of the original 25-year concession period remaining.

Case study 4: Beaumaris Sports Club

Protagonist: Beaumaris Sports Club Inc.
Domain: Community infrastructure
Where: Melbourne
When: 2009–2017

The opportunity

The Melbourne bayside suburb of Beaumaris grew rapidly in the 1960s as new land was opened up for housing and young families moved in, subsequently creating demand for new sporting clubs for the community. In 1962, the Beaumaris Football Club was established, joining the Beaumaris Tennis Club and the Beaumaris Cricket Club.

The three clubs coexisted on the same council owned reserve for 50 years, but as the population expanded and facilities began to age, the clubs began discussing how they could renew their facilities.

In 2009, all three clubs came together to establish the Beaumaris Sports Club with the objective of building club facilities that would meet their needs. Over the next eight years club members worked to establish a $6 million clubhouse, using innovations such as interest earning debentures from club members to help fund the new facilities.

Motivation

There was a perception in the community that it was unlikely the clubs could attract government support to redevelop facilities. As sporting facilities aged, the three clubs came to the view that if new sporting facilities were to be built they would have to do it themselves.

Source of capital

The combined clubs have a strong membership base, with Beaumaris Football Club alone having 28 individual teams in local competitions. The membership base gave the Beaumaris Sports Club Committee confidence to develop a business plan that leveraged a variety of funding sources to develop new facilities. These included member and community donations, interest bearing debentures, sponsorship, bank loans and contributions from the Victorian Government, the local council and sporting associations.One initiative was to establish an annual festival, ‘A Day on Oak Street’, to raise funds for the Beaumaris Sports Club. Fundraising for the festival amounted to $34,000 in 2015 and $43,000 in 2016.[34]

Beaumaris Sports Club used an interest-earning debenture as part of the funding structure. The sports club debentures (unsecured), with a minimum amount of $10,000, are invested in the club for a minimum of 10 years. Interest is accrued from the time of receipt of the contributor funds at 5 per cent fixed per annum, compounding, and payable only at the time of repayment of the contributor funds.[35]

Impediments/success

The club had to deal with a series of challenges at every stage of the project.

Administration

The Beaumaris Sports Club quickly appreciated that it could not manage a project of this complexity by only relying on volunteers. They incurred increased staffing costs to ensure the right resources were in place to guarantee project success. This in turn required an increased focus on fundraising and sponsorship.

Local council

Long delays were experienced by Beaumaris Sports Club going to tender. One of the implications of the delay was that new disability design requirements came into force, which then required an amendment to the planning permit to modify the design. The club was also required to make a change to its planning permit to accommodate trees that had been planted by the council during the planning process.

According to club officials, 'the council consists of multiple business units and it was wrong to assume they talked to each other. Dealings with council would have been done differently had we been aware of this. In particular, the dealings with the finance department of council have been challenging'.

Commercial

The newly established Beaumaris Sports Club needed commercial skills to navigate the development of the club facilities. An early decision was to have the club's business model developed and verified by an independent external professional services firm.

Members and community

While member and community support was critical to the development of the club's new facilities, the length of time involved taken for the project to progress meant some members were unable to fulfil pledges due to changed circumstances. Club officials acknowledge the importance of demonstrating to the local council that the club was fulfilling a community need.

Unexpected outcomes

Perhaps the most unexpected outcome from the creation of the Beaumaris Sports Club was the community spirit that resulted. Historically the three sporting codes, tennis, football and cricket, had coexisted without much interaction. The creation of a single club with the united purpose of building new facilities for them all unleashed community cooperation that up until then had no outlet.

The fundraising festival 'A Day on Oak Street' is the manifestation of this cooperation. While the festival has been successful in supporting the club's fundraising activities, it has also become a central activity in the community calendar.

The success of Beaumaris Sports Club debentures has raised attention to a financing structure that was commonly used to develop sporting facilities but which has largely been forgotten over recent years. The success of the debentures is resulting in a discussion in local government about the potential to use this structure as part of strategies to address the deficit in available funding for renewing and developing sporting facilities.

Case study 5: Hepburn Community Wind Farm

Protagonist: Hepburn Community Wind Park Co-operative Ltd
Domain: Renewable energy
Where: 125km north-west of Melbourne
When: 2011

The opportunity

Hepburn Wind is Australia's first community-owned wind farm. More than 1,900 people pooled $9.7 million to build a two turbine, 4.1 MW wind farm at Leonards Hill, producing more energy on average than the houses in nearby Daylesford and much of the surrounding area use.

The wind farm was established as a cooperative based on the cooperative principle of one member, one vote and was incorporated under the Co-operatives Act 1996 (Vic). The community received support from a small wind farm developer, Future Energy, which underwrote a significant portion of the early stage development costs. Major construction was completed in March 2011 with generation starting in June 2011. In 2012, the wind farm generated 9.8GWh, in 2013, 10.8GWh and in 2014, 11.2GWh.

Motivation

Following the rejection of a wind farm proposal due to local campaigning, a group of Daylesford residents committed themselves to building a small and local wind farm based on the model of community ownership of wind farms in Denmark that would benefit the entire community. The objective of establishing a community wind farm was to provide for the community's energy needs as well as sending a signal that the Daylesford community wanted to see a rapid and meaningful response to the threat of climate change.

Source of capital

Hepburn Wind raised $9,900,000 from members of the cooperative.

Future Energy underwrote a significant portion of the early stage development costs. In recognition of financial risks incurred, Future Energy received a development fee with a nominal value of $400,000, partly payable in shares from the cooperative.

By securing an external loan guarantee of $1 million, Hepburn Wind was able to finance the development of the wind farm without a Power Purchase Agreement.

Hepburn Wind is fully subscribed but continues to accept applications for new membership.

Impediments/success

Hepburn Wind has noted the challenges it has faced in getting the project to market, which are summarised below.

Institutional investment

Hepburn Wind was unable to secure investment from institutional investors. The cooperative states, "while the project's novelty and the unproven track-record of the proponents and the business model presented significant barriers, the first insurmountable barrier was that of project scale. While Hepburn Wind was seeking $2–4 million in institutional investment, the project was consistently advised that projects under $25–50 million were too small to justify investment due to the relatively high fixed costs of the required due-diligence processes".

Debt financing

Without a Power Purchase Agreement in place Hepburn Wind found it difficult to secure debt financing.

Renewable Energy Target

The Renewable Energy Target has, according to Hepburn Wind, "too-frequent reviews and policy uncertainty. Market exposed participants, such as Hepburn Wind, are receiving 'all-in' energy prices below long-run costs, and are relying on future corrections in the certificates market".

Community concern

Hepburn Wind was subject of ongoing community campaigning against the development of the Leonards Hill wind farm, which included defending its planning permit at the Victorian Civil and Administrative Tribunal (VCA) in 2007.

Success

Hepburn Wind has been able to produce a project with over $13.5 million invested and an anticipated working life of over 25 years. The project's construction created employment, with Hepburn Wind currently employing three part-time local staff to operate the wind farm and manage the cooperative. Profits from the wind farm return to local investors as well as supporting local community projects through a community fund.

Unexpected outcomes

The success of Hepburn Wind has directly contributed to the establishment of community renewable energy in Australia through the so-called 'Hepburn Model', with leaders from the Hepburn Wind project supporting the development of community energy projects through Embark Australia, a non-profit organisation focused on the uptake of community renewable energy projects.

End notes

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The Better Infrastructure Initiative is guided by 10 key propositions:

1. Better infrastructure requires better long-term planning.
2. All infrastructure interventions should be scaled, targeted and feasible.
3. The biggest impediment to better infrastructure is lack of transparency.
4. Infrastructure businesses are better than infrastructure projects.
5. Land-use planning and infrastructure planning are the same thing.
6. Good project selection is paramount; financing is secondary.
7. Infrastructure is primarily about service outcomes to people and business.
8. Risk is a catalyst for more innovation.
9. Better infrastructure relies on strong institutional memory.
10. Leadership matters.

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Produced by John Grill Centre for Project Leadership, the University of Sydney, May 2017.