

ImagineSydney

Create | 2017

In collaboration with
Sydney Business Chamber and
University of Technology Sydney

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Deloitte.

*Shaping
Future Cities*



Create

Welcome to the first edition of the **Imagine**Sydney series

Australia's cities have a bright future. Sydney is our country's largest city and one of the most innovative places in the world. We also know that New South Wales, Australia's premier state, will continue to flourish as the ideas hub, and the international gateway, of Australia.

ImagineSydney will explore the opportunities we have to ensure Sydney's prosperity continues well beyond the next decade. By co-creating a broader narrative around the themes of *Create, Work, Live* and *Play*, we can take an expansive and forward-looking view of what matters most to the diverse population within our state.

Throughout the series, we will identify and explore growth opportunities by geographic area out to 2027, articulate strategies and measures for attracting and developing skills and talent, and examine ways of strengthening Sydney's global connectivity within an increasingly integrated world.

Our first edition of the series, *Create*, developed in collaboration with the University of Technology Sydney (UTS) and Sydney Business Chamber – unpacks the connection between innovation and empowerment, and the ways that innovation can be stimulated, prosperity created, and value captured in a systematic way.

Nurturing prosperity requires a concerted collaborative effort from businesses, government and individuals. Together, we can bring to life what's needed to craft and shape a meaningful, vibrant and smart future Sydney.

I am truly excited about the **Imagine**Sydney series and proud to begin the journey with *Create*. I hope it will inspire you to unlock your potential to contribute to the growth of this wonderful city.



Dennis Krallis
Managing Partner – Sydney
Deloitte

Foreword

With continuing changes in the global economy, investing in innovation will be essential to growing Australia's future prosperity.

Sydney, as Australia's international gateway, needs to play a central role in both encouraging innovation as it develops across our city, and in supporting new products, services and business improvements as they are taken globally.

No investment in innovation can occur without first understanding where in our city innovation is already happening and the factors that are contributing to it.

Sydney Business Chamber has been pleased to collaborate with Deloitte in the delivery of **ImagineSydney: Create** as it identifies Sydney's innovation hotspots and how we can better activate them.

Our collaboration builds on our *2014 Thinking Business: Industry-Research Collaboration Project*, which identified practical solutions to improve the conversion of Australia's considerable research expertise into commercial success – a theme that is picked up strongly in this current report.

Positively, while *Create* reinforces the strength of some of Sydney's key innovation centres such as Pyrmont and Macquarie Park, green shoots of collaborative activity are occurring in less recognised areas such as Rydalmere and Turrella. As identified in *Create*, these newly identified areas benefit greatly from their proximity to university campuses, logistics centres and major infrastructure – reflecting the influence location has on the emergence of new innovation.

Deloitte has done a fantastic job in building a framework to map Sydney's centres of innovation. We look forward to supporting and driving forward the growth of these centres.

The Hon. Patricia Forsythe
Executive Director
Sydney Business Chamber



The Sydney Business Chamber is a division of the NSW Business Chamber and represents Sydney's leading corporations as well as organisations from the government and not-for-profit sectors. On behalf of members, the Chamber advocates for Sydney to be a competitive and sustainable global city. The Chamber strives to identify, develop and promote the major issues that contribute to economic activity and growth in Australia's global city, Sydney. This is achieved on behalf of members by representation and collaboration with governments at the local, state and federal level.

In the wake of the biggest mining boom in our history, Australia's future depends more than ever on our knowledge and ingenuity. This is a challenge for all of us because while we rate well globally on our knowledge assets, we can improve on how we make use of them.

UTS is delighted to be involved in this report on Sydney's emerging innovation hotspots, as experience around the world shows that the key to turning these knowledge assets into economic and social value is collaboration.

Much of this occurs in geographically concentrated clusters of research and education institutions, businesses and investors, governments and local communities. Even with the rise of virtual networks, proximity still matters.

We can see from this report that collaboration is taking off in Sydney, more in some places than others, and in different ways. For example, UTS is positioned in a unique 'creative-digital' precinct with a focus on digital media, film and television, fashion and design, and software services.

Other precincts feature medical technologies, advanced manufacturing, logistics, healthcare and financial services.

All contribute to our future growth and wellbeing, and Australia's repositioning as a competitive and dynamic knowledge-based economy.

I would like to congratulate Deloitte on its thought leadership in this report, and thank Associate Professor Renu Agarwal and researchers at UTS for their contribution.

Professor Roy Green
Dean, UTS Business School
University of Technology Sydney

**UTS
BUSINESS
SCHOOL**

UTS is a dynamic and innovative university in central Sydney. As a leading university of technology, UTS has a distinct model of learning, world class research performance and a strong reputation for engagement with industry and the professions. UTS has a culturally diverse campus in Sydney's creative digital precinct with research and teaching programs that prepare graduates for workplaces of the future.

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Executive summary

When we think of innovation success stories globally, we point not only to individual organisations, but increasingly to places. As a place, Sydney is Australia's global city and one of the most innovative cities in the world. It is also our start-up capital, a hotbed for international investment, and a magnet for talent.

We know that innovation is vital to Sydney's continued success, but unlocking our population's potential to continue innovating – and accelerating that momentum – may be simpler than we perceive it to be.

This report examines innovation beyond invention, explores the city's 'hot pockets' of value using heat maps – including some big surprises – and outlines a range of actions towards co-creating and implementing smart ideas.

It looks at how 'gazelles' – high growth potential entrepreneurial businesses – can achieve big things through innovation and entrepreneurship, and how 'tent pole tenants' – large, well established organisations – hold up the tent as the stable foundation for successful regions.

This report also includes the first Sydney-specific innovation index, the 'Create Heat Index'.

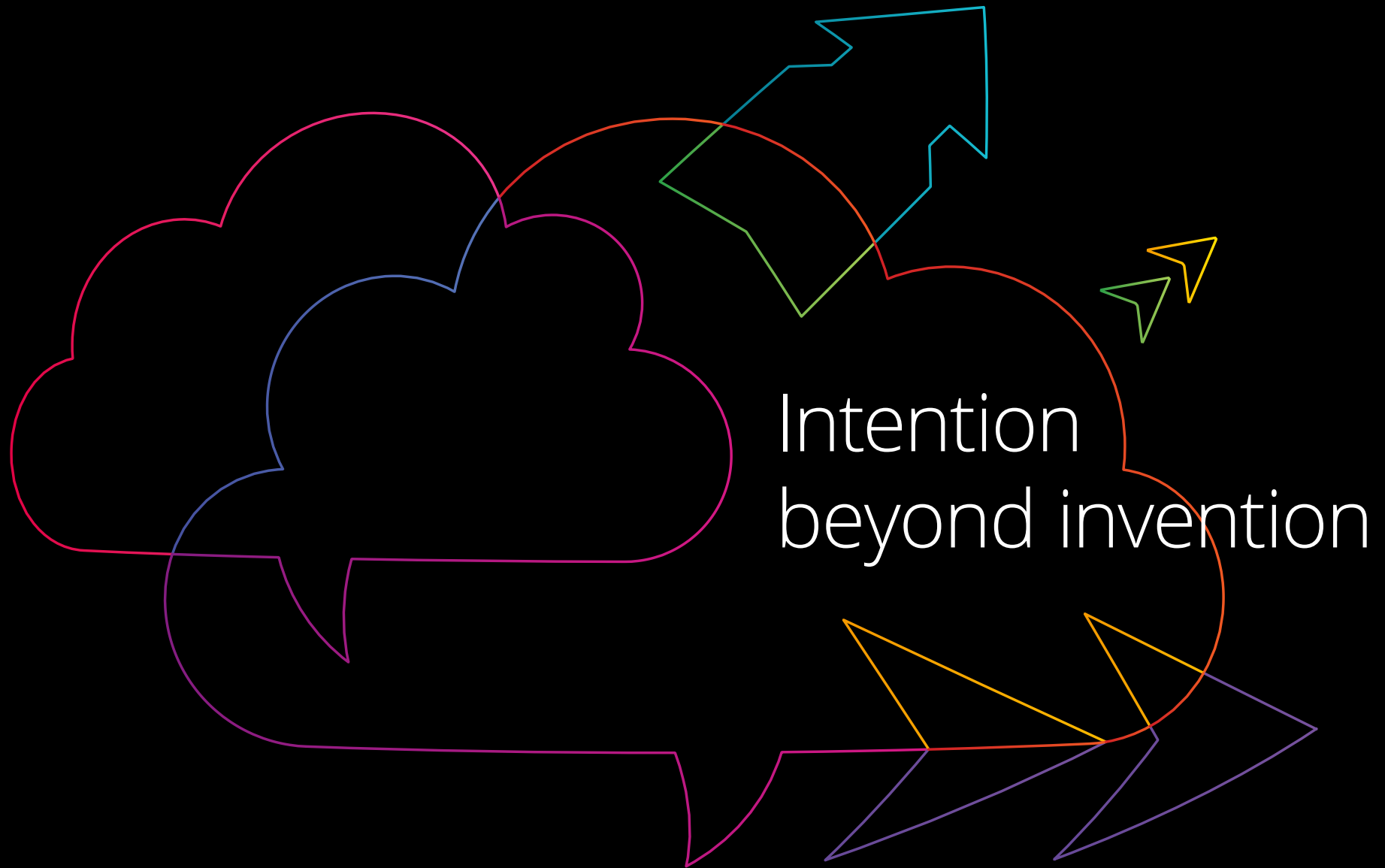
Productivity growth through innovation also requires the momentum of a concerted and collaborative effort between businesses, research institutions and individuals. As more exciting precincts emerge across the city, we will need to harness their potential for collective benefit.

Our focus on innovation may not be new, but it needs to be renewed regularly. Analysing data from the Australian Bureau of Statistics, we estimate that there are currently around 138,000 businesses in Sydney which could be described as non-innovators. Small, incremental changes to this group can have a huge overall economic impact – because a more innovative city could be worth close to \$25 billion.

The more businesses, institutions and individuals on board, the easier it will be to attain the sustained momentum necessary to craft and shape a vibrant, flourishing and prosperous city.

Changing the way we think about innovation will determine how we use it to further unlock Sydney's growth opportunities and maintain our global reputation as the ideas hub of Australia.

Sydney, imagine what we can create together.





Innovation has a perception problem.

While lots of us are talking about it, many think of it as a buzzword, or conflate innovation with invention – new ideas like the cure for an illness, or the next Google Maps. We are caught in a loop of innovation hype.

In truth, innovation is much simpler – and broader.

Every single person and every organisation can innovate. A smart idea can come from anyone, anywhere; a local employee or a foreign competitor; an old supplier or a new customer; another industry or a research paper.

And implementing these ideas, whether in a new context or bringing them to life for the

first time, can create and capture value. Innovation is the key driver of business productivity growth, which translates directly into national economic growth.¹

An entrepreneur who repackages an existing product to broaden its appeal beyond its traditional audience can create a new market. A manager who reforms an internal process to make it more efficient can improve their organisation's productivity.

These activities are less readily identified as innovation by most. But academics and governments, from Joseph Schumpeter in the 1930s to the OECD today, acknowledge their role. More recently, work by the Brookings Institute and the Centre for London shows that localised precincts inside cities can offer diverse benefits.² ➔

Changes at a process, marketing and organisational level can be just as important as product innovation in creating and capturing value. For example, research shows that:

- Australian businesses that introduced new organisational or managerial processes were 3% more likely to achieve above average revenue growth³
- Implementing improved managerial processes increased productivity by 11% and profitability by \$230,000 annually in a controlled trial⁴
- After controlling for country, sector, employees, skill, and hours worked, a “single point improvement in management practice score is associated with the same increase in output as a 25% increase in the labour force or a 65% increase in invested capital”⁵
- Process innovation in an organisation increased productivity growth by 1.5% in the year it was introduced, and had a positive impact on productivity growth for three years after its introduction⁶

- Introducing an innovative customer-focused marketing campaign increased returns on investment, while businesses that implemented the campaign saw a resultant increase in profits by \$1 million on average.⁷

These benefits can add up – locally and nationally.

Organisations that reported completing *any* type of innovation, whether organisational, managerial, process or product, were more likely to report a productivity improvement in the following year.⁸

Beyond the direct effect, the cumulative impact of company-level innovation on national productivity is far more than the sum of its parts. Competition and positive spillovers act to amplify the firm-level benefits, as new ideas are diffused through the economy, and less productive businesses exit through a process of creative destruction.

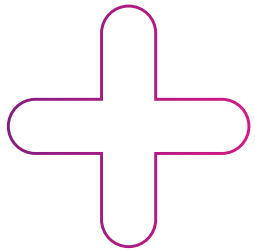
With Australia facing declining commodity prices, falling terms of trade, and an ageing population, improving national productivity is key. According to Phillip Lowe, when he was speaking as Deputy Governor of the RBA: “over the next decade or so, if we are to achieve anything like the type of growth in real per capita income that we have become used to, then a substantial increase in productivity growth will be required.”⁹

So, why aren't we innovating the way we should be? And what needs to change in order for us to use this growth lever more effectively?

Innovation and science are critical for Australia to deliver new sources of growth, maintain high-wage jobs and seize the next wave of economic prosperity. Innovation is about new and existing businesses creating new products, processes and business models. It is about tech entrepreneurs working on the latest product but, equally, about farmers using sensor technology to improve yields, or a business bringing new products to market.¹⁰



The state
of *Create*



Our focus on innovation is not new. In fact, innovation policy has a long and strong history in Australia. But it needs to be renewed regularly to continually evolve, or we risk falling behind and missing powerful opportunities.

Australian federal and state governments have acknowledged that broader ways of creating and capturing value – whether through marketing, process, or organisational change – are a vital component of improving national productivity.

Several reports have been published on the importance of innovation to the economy, seeking to measure its levels and suggesting steps to take this forward. More than 60 reports on innovation have been issued by the federal government in the last 15 years alone.¹¹ ➔

Innovation is a process of trying things in new and different ways, often through... improved connections and collaboration, to derive value by meeting community, industry and consumer needs... We believe that this will help us to tackle complex economic, environmental and social challenges, stimulate economic activity and drive shared prosperity for the people of NSW.¹²

Indeed, within the NSW Government alone, ongoing activities to support the development of innovation precincts include the NSW Innovation and Productivity Council, Jobs for NSW, and the Greater Sydney Commission.

Governments are doing the right thing by investing in initiatives to foster innovation – from encouraging greater collaboration between industry and research to developing a more skilled workforce and driving public sector innovation.

But government working in isolation is not the answer. Improving our performance will require a concerted effort from businesses, research and individuals.

Many are already on board. The Business Council of Australia recently assessed Australia's innovation system nationally, and issued calls to action to improve our innovation performance. In NSW, the NSW Business Chamber published *The Thinking Business: Industry-Research Collaboration Report*, while The Committee for Sydney released *Collaborating to Compete in the Digital Era*.

More must be done.

Although we have a high proportion of innovation-active businesses, a relatively low proportion are undertaking research and development.¹³ Further, our innovation system is poorly networked; businesses are less likely to collaborate with each other, and with research, than in other countries.¹⁴

Our challenge is to change the lens. By confining ourselves to a narrow definition of innovation as invention – and considering it someone else's business – we risk being left behind. To fully embrace our potential and support ongoing prosperity, we need to recognise and embrace our ability to create.

Innovation in the digital era

When we think about innovation, people often jump straight to technology. Whether it be digital start-ups or emerging technologies, like virtual reality, we think that all innovation must be digital.

There's no doubt that technology is a vital tool in the innovator's toolbox. It's an enabler of our modern society and economy, and gives businesses and individuals the chance to explore and implement new ideas.

And its role will only continue to grow. Deloitte Access Economics estimated that the internet contributed \$79 billion to the Australian economy in 2015, and will grow to be worth \$139 billion by 2020.¹⁵

However, technology is just one piece of the puzzle and, on its own, is not enough to create and capture value. Instead, we need to think about how and where it is best deployed, what types of value it may create, and for whom.

For example, consider smartphones. It can be cheap and easy to create an app. But the true value comes when we understand the needs it might meet, the time it could save people, and the challenges it can help overcome. Is it a way of engaging with customers by providing location-based services? Could it be used to boost the productivity of remote employees? Perhaps it provides a platform for communicating instantly and anywhere with key suppliers?

Technology can help achieve all these goals – but it is only one part of a broader story.

Begin small, benefit big

Innovation, in and of itself, does not have intrinsic value. But its outcomes – increasing organisation’s ability to adapt and change, greater productivity, new value adding products, and others – can contribute to the success of individuals and businesses.

A recent analysis by the Office of the Chief Economist sought to objectively quantify the benefits to businesses of innovating more frequently. Using a sample of around 6,000 Australian businesses over a three year period between FY2012 and FY2014, they measured the impact of innovation frequency on a range of business metrics. The study examined a range of other factors that might affect business performance, including size, industry, collaboration, and ICT intensity. The research found that businesses that self-report innovation more frequently experience higher annual growth rates – in sales, value added, profit, and employment.

These benefits flow through to suburbs, cities and even countries. More productive organisations and individuals stimulate economic growth, wealth and improved living standards.

There’s a wealth of evidence to show how even selected types of innovation can contribute to the overall economy:

- A 1% increase in business research and development in Australia leads to a long run increase in productivity of 0.11%, and a 1% increase in public research leads to a long run increase in productivity of 0.28%¹⁶
- A 1% increase in patents lift GDP per capita by around 0.05% (in a study including Australia)¹⁷
- New high growth potential businesses (or gazelles) are a significant determinant of economic growth, and Australia has a relatively strong level of high growth potential entrepreneurship, outperforming Israel, the United Kingdom, the United States of America and Singapore.¹⁸

So what benefits would more innovative businesses and regions bring to Sydney?

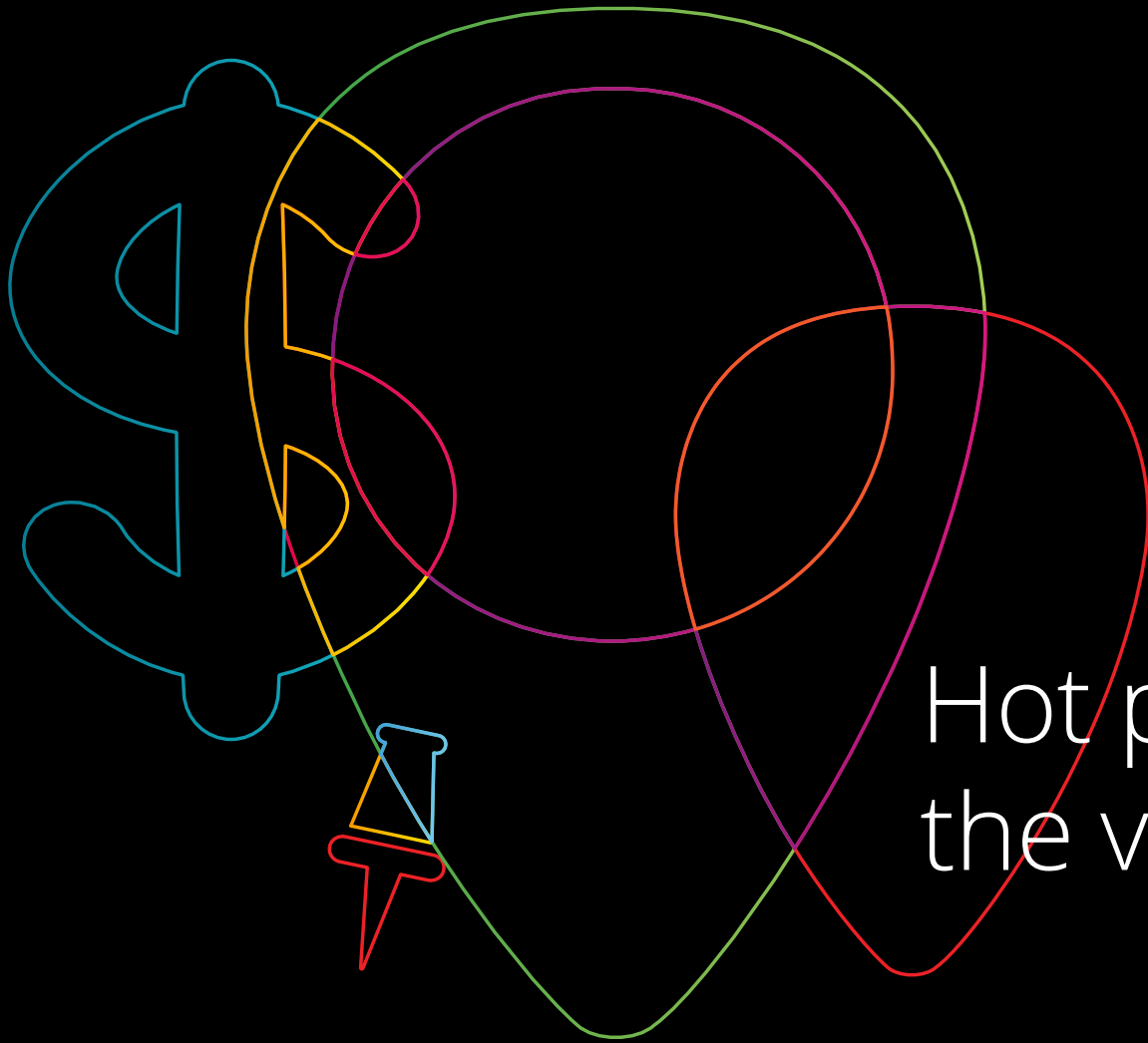
Today, using data from the Australian Bureau of Statistics, we estimate that there are about 138,000 businesses in Sydney who are non-innovators – businesses that have not reported the introduction of a significant change to their offerings, their processes, their organisation or their marketing methods in the past three years.¹⁹ For context, that’s about one in every three businesses based in Sydney – a significant proportion.

Small changes in this group could have a huge overall economic impact. Using the work by the Office of the Chief Economist as a basis, we explored some hypotheticals.

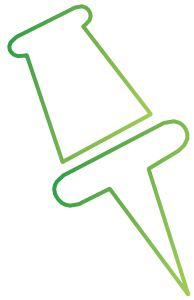
We found that if even 10% of Sydney’s non-innovator businesses were to begin to create or capture greater value by doing something new every year, it could make Sydney’s gross regional product increase by \$24.8 billion. It’s not clear to what extent this is additive – for example, the prosperity of these firms may come, at least in part, at the expense of others. But clearly, there is a significant benefit to be had.

In perspective, \$24.8 billion represents a substantial contribution to Sydney’s economy – it is more than the \$20 billion²⁰ annual spend of the NSW Government on health, or the estimated \$19 billion lifetime value of Sydney’s beaches.²¹

Everyone does not have to be making the next big thing to secure our economic future – smaller, more frequent changes also add up. But the better able we are to create and capture value overall as a city – whether it be through small or incremental change across the board, or big bang changes in particular areas – the more we will all prosper.



Hot pockets: capturing
the value in *Create*



We know that innovation is essential to Sydney's continued success. But unlocking its potential may be simpler than we perceive it to be. Innovation is all around us, and everyone can play a part in its story.

How do Sydney's regions perform in creating and capturing value? What are the strengths and weaknesses of each region? Beyond invention, how good are we at finding and implementing new ideas?

To support and inform the debate, we have developed the Create Heat Map. By bringing together a range of quantitative data sources, and the best of Deloitte and industry, economic and strategy capabilities, we hope to provide concrete evidence on innovation activity in Sydney's regions. Our approach is designed to evolve and improve over time to help Sydney's individuals, businesses and government think about innovation at a more granular level. ➔

The Create Heat Map

The Create Heat Map uses a range of indicators to measure the innovative performance of regions in Greater Sydney. Specifically, it draws on our Create Heat Index, which seeks to illustrate the innovation outputs (product, process, marketing and organisational innovations) generated by each region, and the innovation inputs (like human capital, local institutions, collaboration and investments) that support it.

It's important to note that we've standardised our Create Heat Index by regional employment. This means the Index is not a measure of the absolute amount of activity in an area. Rather, it should be interpreted as how much innovative activity there is per employee.

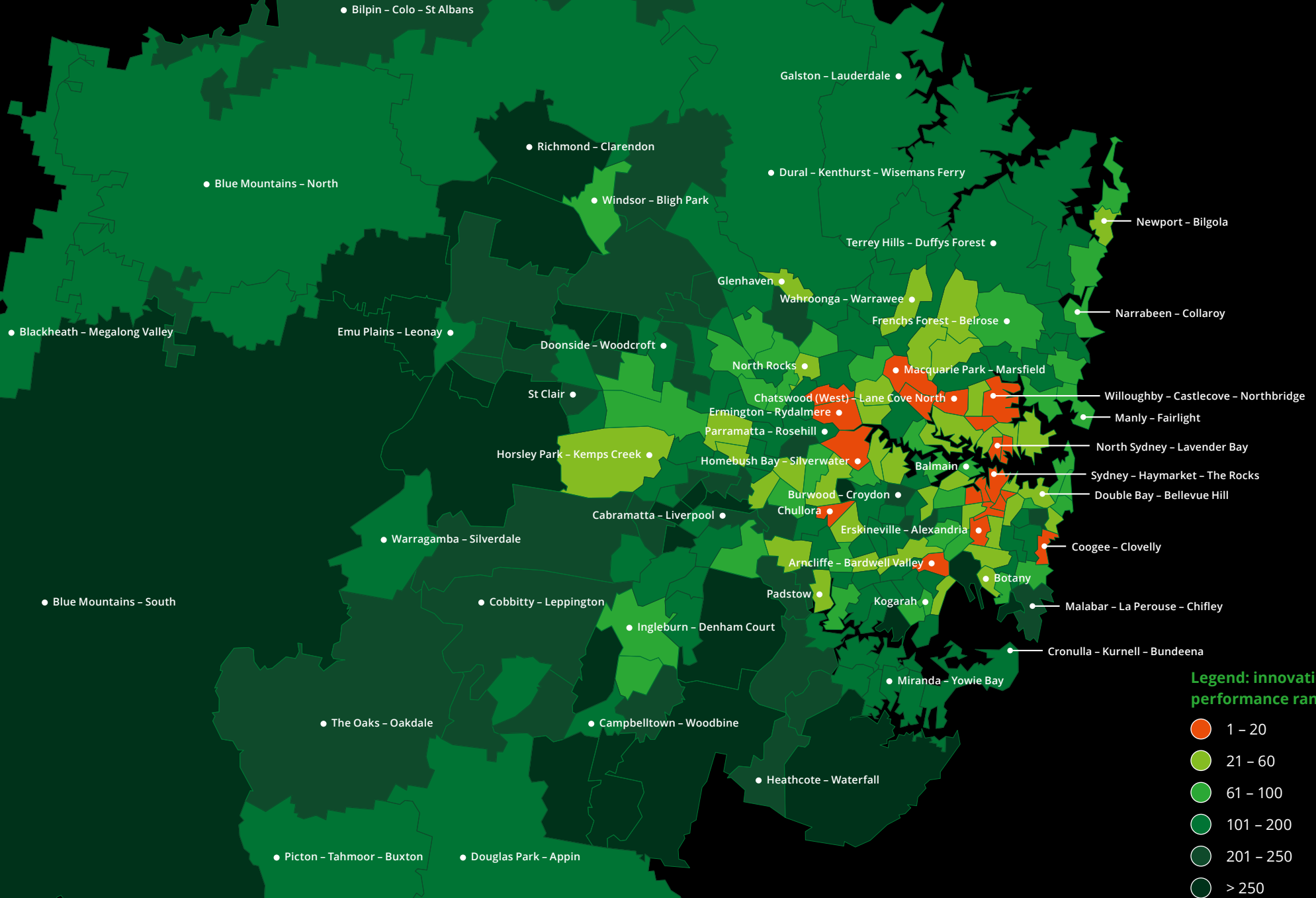
We do this because activity in absolute terms is driven mostly by employment. It stands to reason that more people working in an area generates more activity. As such, absolute measures of activity could disguise high-performing regions, which may not show up just by virtue of having a relatively smaller number of workers.

Our work is founded on the National Innovation Map, compiled by the Office of the Chief Economist, as well as the OECD's Guidelines for Collecting and Interpreting Innovation Data. It builds on both of these sources by:

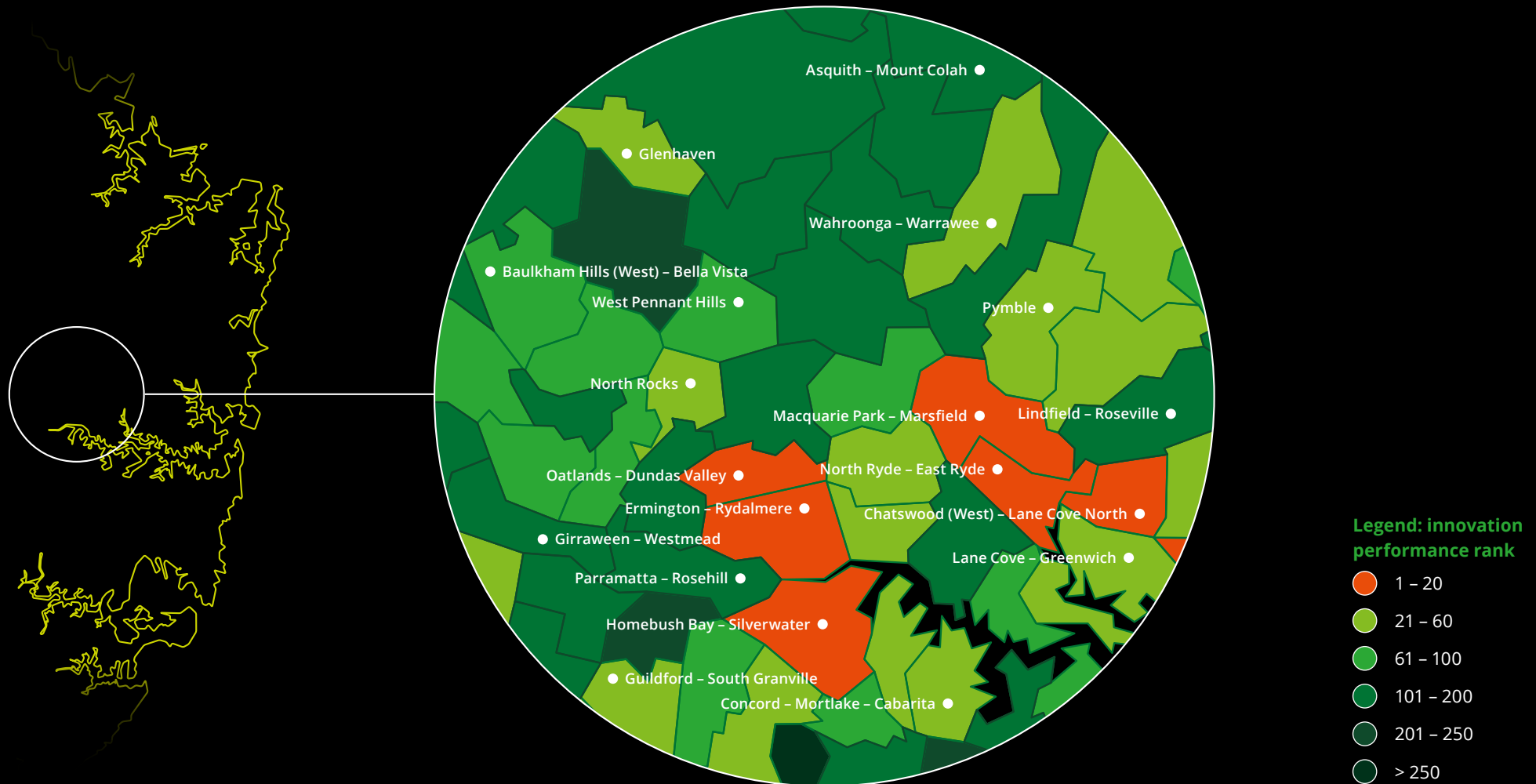
- Adding a layer of geographic granularity
- Including more indicators
- Indexing and compiling the indicators into a single measure.

It uses data from a range of publicly available and bespoke datasets, including from the Australian Bureau of Statistics, the Federal Department of Industry, Census, and IP Australia.

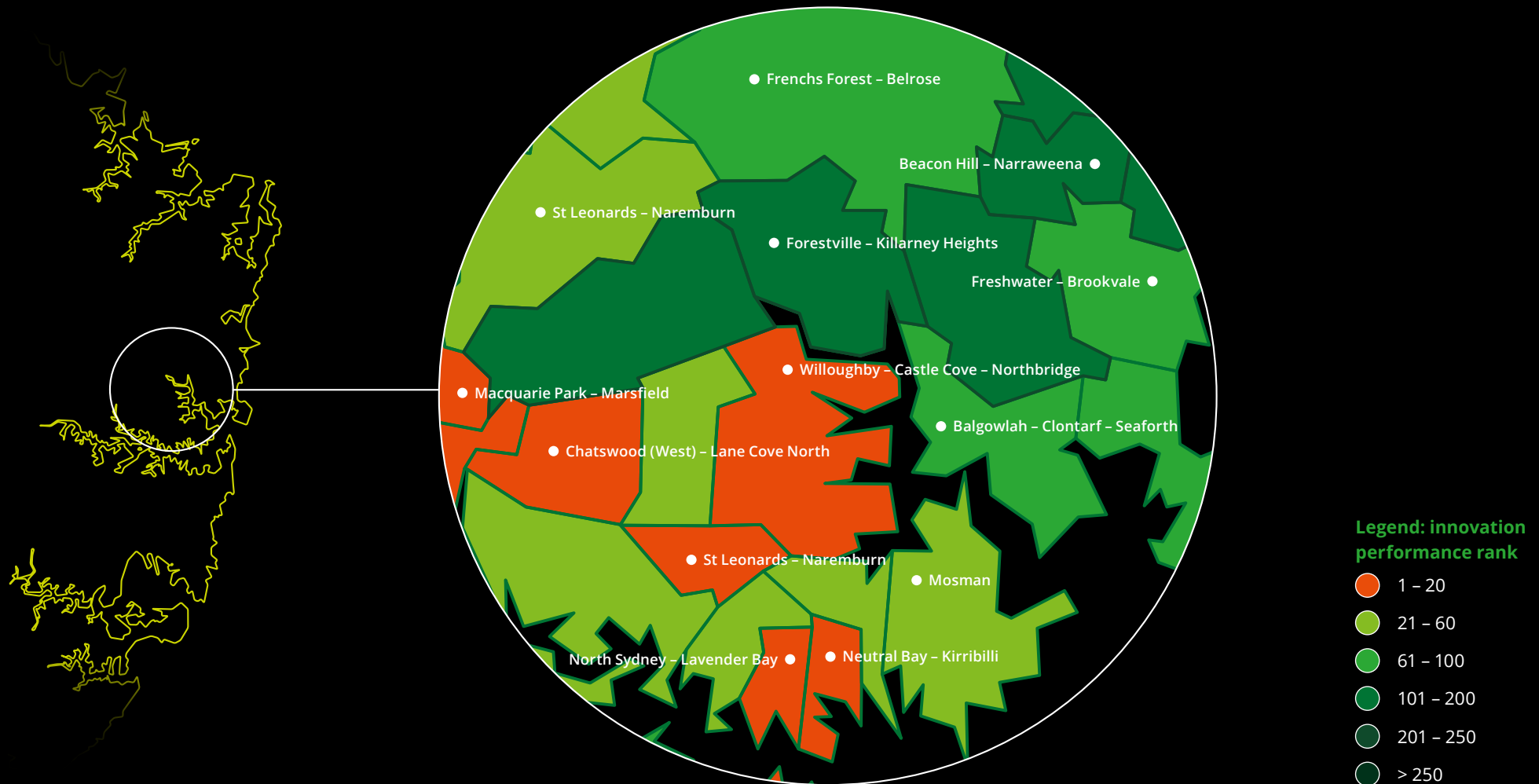
Further detail on how we constructed the Create Heat Index is available at www.shapingfuturecities.com.au.



The Create Heat Map: in focus North-west



The Create Heat Map: in focus North-east



The Create Heat Map: in focus South-west



The Create Heat Map: in focus South-east



Hot pockets: some of Sydney's most innovative regions

As shown in the previous maps, innovation happens everywhere. From Sydney's western suburbs to eastern beaches, and from the Shire to the Hills – we find systematic evidence that businesses and individuals are doing new things to create and capture value.

Clearly, Sydney's innovative activity, when measured on a per employee basis, is not just confined to one or two areas; every region is contributing to our city overall.

But some areas are excelling. By analysing the Create Heat Index, we can identify hot pockets; some of the regions that, per employee, create and capture the most value:

- **Sydney CBD (including Haymarket and The Rocks)**
 - Home to many large institutions, including the NSW Government, major offices of the Big 4 banks, the Big 4 accountancy/consulting firms, as well as major property and infrastructure players, and global supply-chain logistics companies.
- **Macquarie Park (including Marsfield and North Ryde)**
 - Includes institutions such as the Macquarie University Hospital, Macquarie University and various technology firms.

- **North Sydney**
 - Includes health institutions, technology companies and professional services organisations.
- **Pymont (including Ultimo)**
 - Adjacent to the Sydney CBD, Pymont/Ultimo has been recognised by the NSW Government as a knowledge and digital-creative start-up hub. The area is also host to the University of Technology Sydney, and a well known start-up co-working space.
- **Surry Hills**
 - Home to a key publishing company and major food retailers, along with some of Australia's fastest growing start-ups.

Potential for growth

Outside of the hot pockets, some regions of Sydney have many ingredients that may set them up for future success.

For example:

- **Westmead** – already home to one of the largest health precincts in Australia, significant further investment is going in to Westmead as a key part of the Greater Sydney Commission's Draft District Plan for West Central Sydney. The precinct has a vision to transform into "an innovative, contemporary and integrated centre...". For more details on the Westmead redevelopment, visit www.shapingfuturecities.com.au
- **Parramatta** – the second CBD, Parramatta ranks third in Sydney in terms of the number of people working in the area. An increasing number of large organisations are located in Parramatta, which is also home to the University of Western Sydney. With Western Sydney's continued growth, Parramatta has many of the ingredients for success.

- **Neutral Bay (including Kirribilli)**

- Home to engineering companies, as well as a range of professional services and technology businesses, including innovative digital consulting and internet-of-things companies, as well as cloud-based construction tender and contract management organisations.

- **St Leonards**

- Home to Royal North Shore Hospital, a range of supporting medical services, as well as a number of advertising and media companies.

- **Alexandria and Redfern (including Erskineville and Chippendale)**

- Home to major fashion retailers and kitchen appliance leaders
- Also includes Australian Technology Park, the NSW Government's transport and logistics knowledge hub. This area hosts key media players, as well as construction companies that include design houses operating as testing grounds for new concepts and self-initiated experimentation. One of the Big 4 banks is also expected to move 10,000 staff to the area.²²

- **Rydalmere and Homebush Bay (including Ermington)**

- Near the Parramatta CBD, Rydalmere is home to the Western Sydney University's southern campus, leading international electronics and systems groups and fire safety equipment manufacturers, while Homebush includes logistics leaders, the Olympic Park precinct and the Charles Sturt University Sydney office.

- **Turrella (including Wolli Creek, Arncliffe and Bardwell Valley)**

- Neighbouring the Sydney International and Domestic Airports, Turrella is home to many logistics businesses, as well as other industrial activity.

It's difficult to pinpoint one factor which makes these regions so successful. For example, Neutral Bay has the highest number of trademark applications per employee, making it one of the best performing regions on marketing innovation, but has low performance on product innovation.

Clearly, each area is unique and its innovation performance can be the result of serendipity as much as design.

(Not) the usual suspects

Some of the best-performing regions are as we'd expect – Sydney CBD, Macquarie Park and North Sydney, for example, are all well acknowledged hubs and knowledge centres.

However, others – like Rydalmere and Turrella – are less obvious. Why do they feature?

These areas are all relatively residential compared to the usual suspects. Because fewer people work in this area, the innovative activity that we measure is less spread out on a per employee basis. So the same amount of innovation activity (in absolute terms) will generate more innovation per employee, and this would be reflected in the Create Heat Index.

As a point of comparison, if we measure absolute levels of activity, we find the following regions as the most innovative:

- **Sydney CBD (including Haymarket and The Rocks)**
- **Macquarie Park (including Marsfield and North Ryde)**

- **Pymont (including Ultimo)**
- **Newtown (including Camperdown and Darlington)**
- **Surry Hills**
- **North Sydney**
- **Alexandria and Redfern (including Erskineville and Chippendale)**
- **Waterloo (including Beaconsfield)**
- **Darlinghurst**
- **Potts Point and Woolloomooloo.**

There is clear overlap between this list and that presented previously. However, under this methodology, the level of employment is the most significant determinant of innovation activity. For example, the CBD is found to be more than four times more innovative than Macquarie Park, and more than six times more innovative than Waterloo.

Driving innovation from the inside out

Adactin is a fast growing, award winning software testing services company based in Western Sydney. Founded with only two employees in 2011, it now employs more than 60 people, with offices in Canberra, Melbourne and now in Auckland, New Zealand.

The key to Adactin's growth has been the development of innovative software testing technology. CEO Navneesh Garg explains:

"The way we innovate is in the way we test, so much of the focus is on test automation and how we can speed up the way in which we do testing. We can do smarter testing instead of just doing the mundane work of manual testing."

This approach allows Adactin to differentiate itself from its competitors and grow:

"We were different from a lot of other competitors we had, so we started innovating early on, we started improving, improvising on the way we test and we used a lot of technical tools that were available, that's probably bumped up our growth."

Continuous improvement of its internal processes is also central to the Adactin way of working, as it seeks to add efficiencies to day-to-day activities and be innovative about the way it operates. Navneesh explains that "the other aspect of the innovation we pursue is more around the process side; we improve and become more efficient in the way we work internally and deliver."

The strength of Adactin's growth comes just as much from the people in the company. Human resources play a huge role in fostering innovation and ensuring that individuals, regardless of their discipline, are constantly thinking.

"We want to improve the way we do things, and that has led to creativity because we encourage people to work smarter, to create new things if they can, to come up with new ideas. So that's the kind of environment we try to have within the organisation."

Sources of innovation and improvement have not only come from Adactin's own employees but also from clients:

"A client came to us and asked how we could create a solution to their problem. So what we did was create a utility for that customer, which then became a product line for us. The way you solve those problems leads to innovation."

When the company does not have the capability or capacity to develop a specific product itself, Adactin partners and collaborates with others who have the expertise:

"When we know what we want but don't have that capability, we partner, we look for able people who can help us, work with us to develop something or give us the required knowledge."

Adactin has also partnered with universities in Sydney, offering training programs that assist in the development and learning opportunities for new migrants and university graduates.

Navneesh hopes to maintain growth by driving talent to create ideas that solve problems. "That's something which helped us maintain growth and hopefully that can keep going for the next 3 to 5 years."



WESTERN SYDNEY UNIVERSITY

Adactin

50

Creativity rising – what heats the mix

There are a few powerful contributors that heat up the innovation gauge, namely density, high-growth potential entrepreneurship, and collaboration. They are not intended to be an exhaustive explanation or list. Instead, they're an insight into just some of the factors that make innovative regions tick.

Density

Regions with higher density (i.e. a greater number of people working in the area) are more productive and specialised.²³ This is because where there are a greater number of workers in the same area, there is an increased likelihood that they will overlap; the serendipitous coffee shop meeting is more likely to occur where there are more people. This facilitates the exchange of information between individuals and across firms.²⁴

So, where is the biggest concentration of workers in Sydney today? Exactly where you'd expect it – the Sydney CBD. With more than 250,000 people working in the area in 2012, it has more than five times as many workers as the next densest areas (North Sydney and Parramatta). Other relatively dense areas include Macquarie Park and Pyrmont/Ultimo, as shown in Chart 1.1.

As our population centres continue to move west, so too will commercial opportunities. Employment density will continue to increase in the Greater Sydney Commission's West Central district, particularly as Parramatta emerges as a second CBD. But the CBD will continue to play a pivotal role as the employment centre of our city for the foreseeable future. ➤

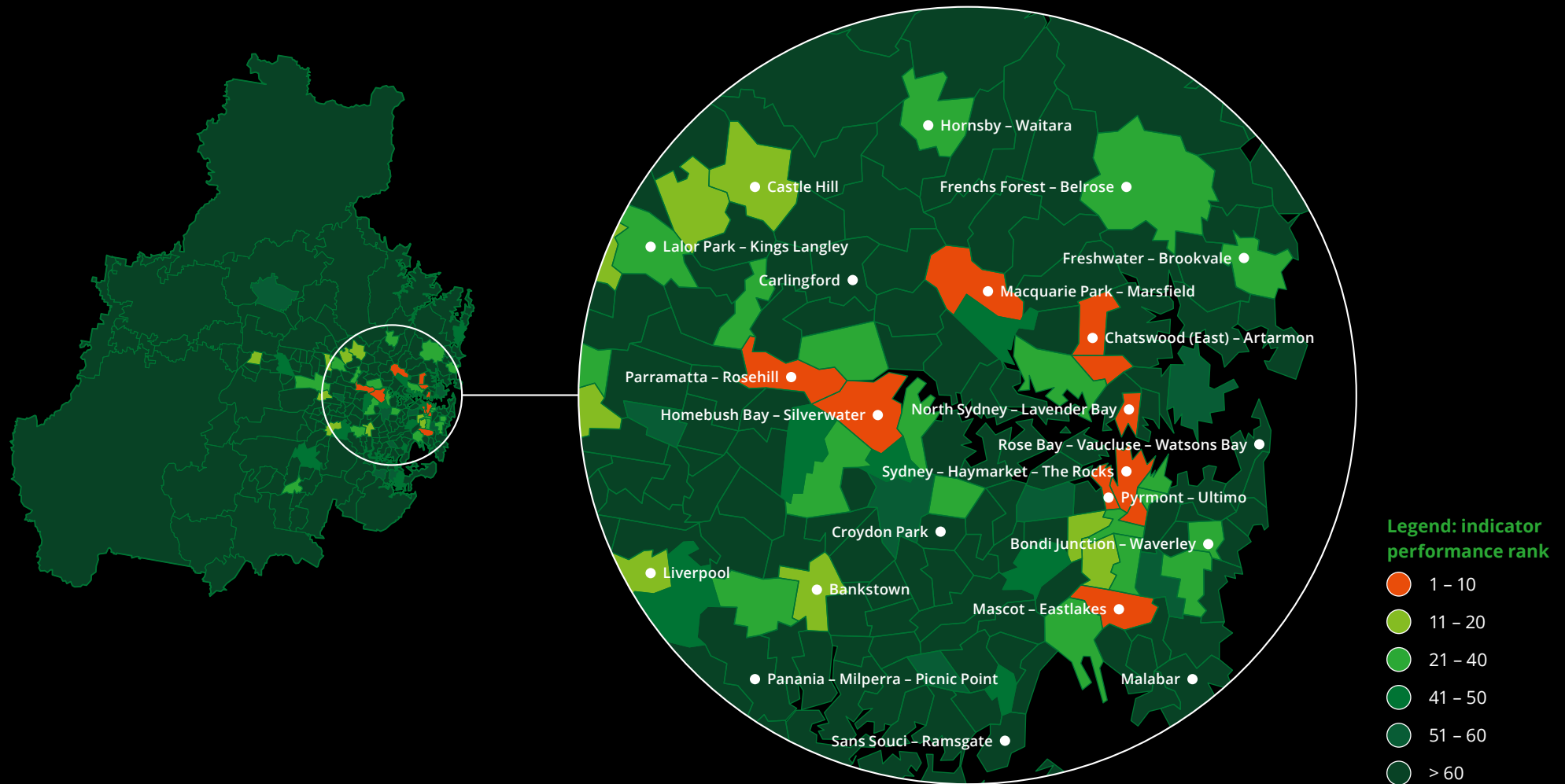
Shaping Future Cities: Designing Western Sydney

One in ten Australians already live in Western Sydney, and one million more will live there by 2031.

Shaping Future Cities: Designing Western Sydney, published by Deloitte in December 2015, is a blueprint for the economic transformation of Western Sydney that unites multiple stakeholder perspectives on how to transform and restructure the region. It outlines how best to enable people to work, live and play in the Western Sydney area and provides a blueprint for the economic transformation of Western Sydney to create 200,000 new jobs by 2020.

Chart 1.1

Hot pockets of density



Density can also encourage specialisation; a concentrated number of businesses in a given industry. Specialised areas indicate that the related economic effects are strong enough to attract economic activity from other areas, causing greater spillovers and linkages.²⁵ A specialised region is likely to attract more workers from various locations.

Many of Sydney's regions have some degree of specialisation. For example, the NSW Government has already recognised four knowledge hubs in the greater Sydney area. And this specialisation can pay off in terms of innovation – all four knowledge hubs (Sydney CBD, Macquarie Park, Australian Technology Park and Ultimo) are recognised in our hot pockets. For example:

- **Sydney CBD – financial services**
 - There are well over 9,000 financial services businesses in the CBD, making it the most concentrated industry in the region. With the Big 4 banks, major insurers and Big 4 accounting firms all having a strong presence (if not a national headquarters) in the CBD, this density continues to be renewed and reinforced. Specialisation in this area has led to more talent being attracted to the CBD for employment in the financial services area.

- **Macquarie Park – medical technology**
 - Another top performer is Macquarie Park. The co-location of Macquarie University and the Macquarie University Hospital has drawn a wide range of large international medical technology businesses, which collaborate and co-locate with the university and benefit from a pool of skilled professionals and academics.
- **Ultimo – creative digital**
 - One of Australia's largest hubs of digital and creative talent is located in the area around Ultimo, Pyrmont, Haymarket and Surry Hills. The region includes a mix of digital media, software and design companies, and also includes the University of Technology Sydney.

Specialised precincts can be very effective at drawing specific resources. It's important to remember, though, that diversity and collaboration across industries is important to supporting overall innovative performance.

An organisational ecosystem

Regions are supported by the businesses, institutions and people who work in them.

Large incumbents can underpin the culture of a region, serving as a magnet and attracting others to co-locate. Universities and TAFEs can be a centre of knowledge and collaboration, attracting high-class talent and new ideas. Gazelles – new ventures with high growth potential – can create an exciting dynamic and spur future growth.

Clearly, the organisations which are already based in a region are a vital determinant of its potential to create and capture value.

Tent pole tenants

At the foundation of successful regions are tent pole tenants – the large, well-established businesses who are major employers in the area, holding up the tent.

Beyond their own activity, tent pole tenants can create spillovers, which attract and support other businesses in the area. This idea is derived from the classic 'anchor tenant' hypothesis, where a large department store in a shopping centre creates demand externalities for other less well-known stores.²⁶

So where are Sydney's tent pole tenants? We use data from IBISWorld²⁷ to identify some of the top organisations headquartered in NSW, as pictured in Chart 1.2. Most are located in the CBD – testament to the power of co-location.

However, when standardising for employment, we can see a new picture emerging. Macquarie Park and North Ryde are home to the most tent pole tenants per employed person; a sign of more growth to come in this area.

Similarly, St Leonards, North Sydney and Arncliffe are home to major organisations which could help to explain why these regions perform strongly in our index. ➔

Chart 1.2

Hot pockets of tent pole tenants

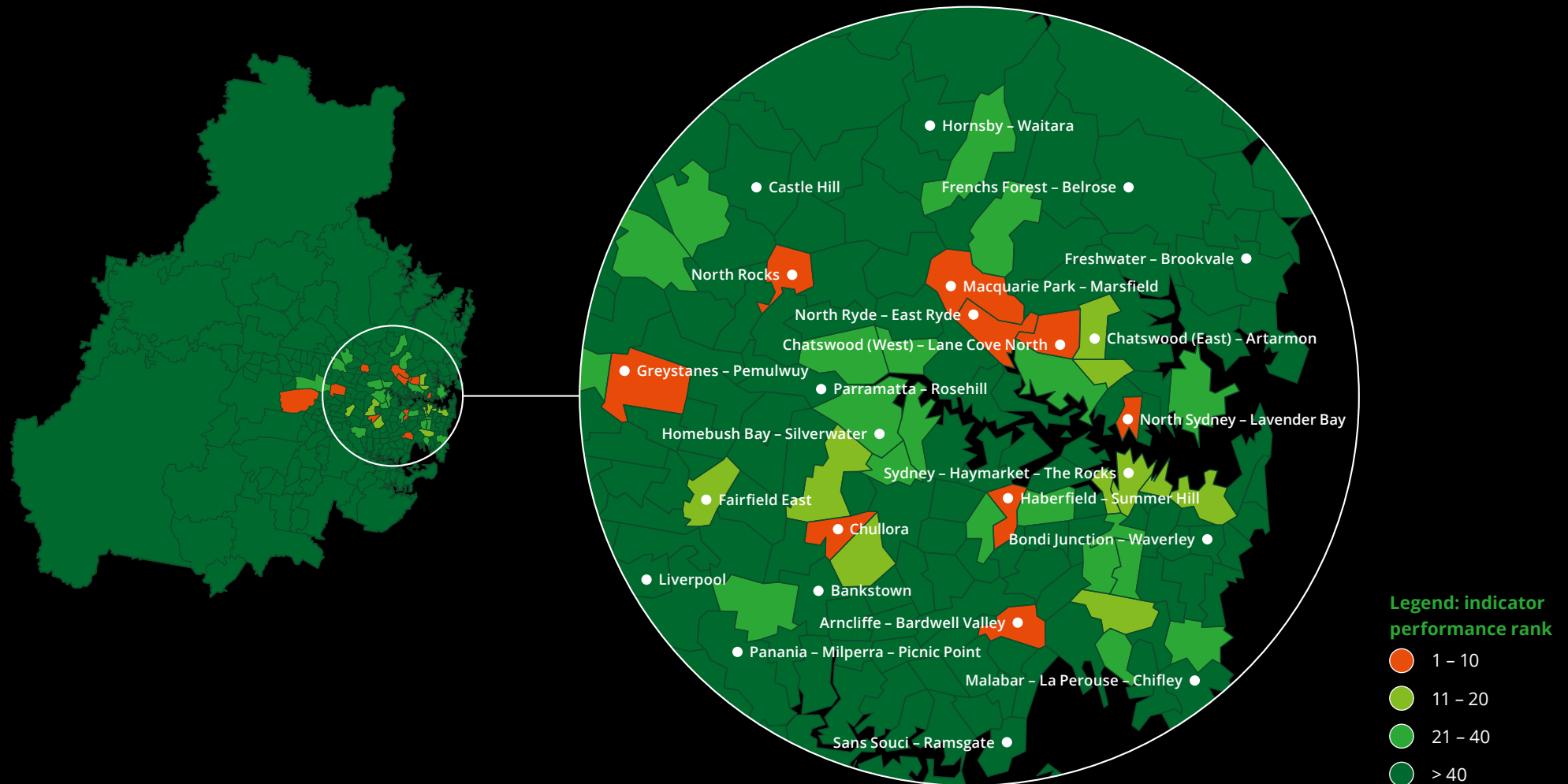
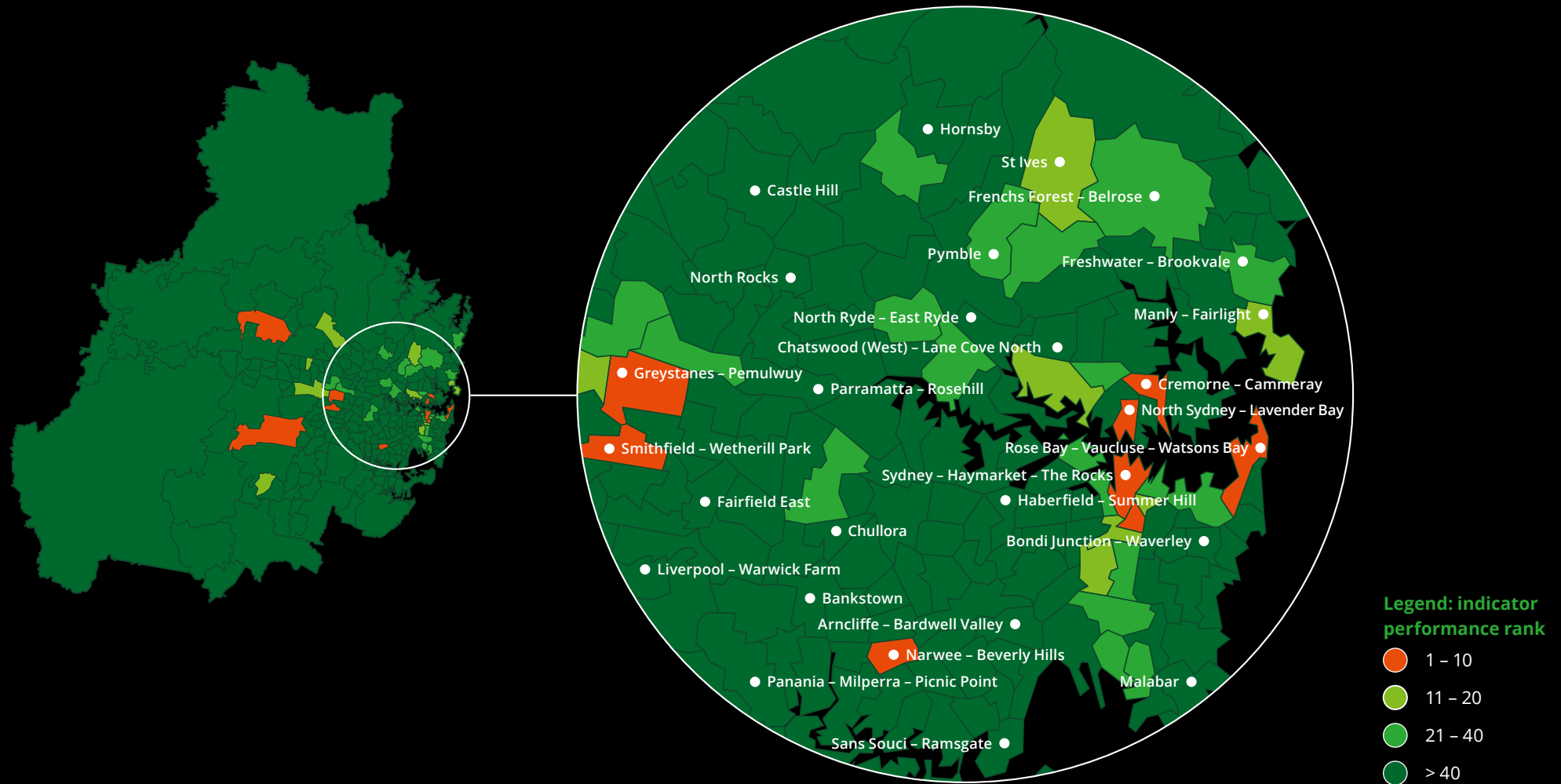


Chart 1.3

Hot pockets of high-growth potential businesses



Gazelles

Small business is well acknowledged as the powerhouse of the Australian economy. And gazelles – high growth potential entrepreneurial businesses – will achieve their potential through innovation and entrepreneurship.

Gazelles often have profitability and growth as their main goals, and create value through their innovative strategic practices.²⁸ And they can grow quicker, and larger, than most small businesses.²⁹

We identify gazelles as selected entrepreneurial businesses with an annual growth rate of over 20%, which have maintained consistent expansion in both employment and turnover. Chart 1.3 highlights the regions with the greatest concentration of high-growth entrepreneurship firms.

Successful start-ups are ultimately the product of capital, ideas and talent. Regions which spur or amplify these factors will be most effective in nurturing local gazelles.

Once we've standardised for employment, we find the greatest concentration of gazelles is in Surry Hills, home to some of Australia's fastest growing start-ups, along with some of our most successful venture capital and other facilitators.

Gazelles will continue to bolster innovation activity in their regions, as well as fuel broader employment growth. Previous studies have shown that while high-growth firms are rare, they have a tendency to generate a majority of jobs.³⁰ The challenge for government is to ensure they have room to grow, and incentives to stay in Australia while they expand globally.

Universities and TAFEs

Research institutions are a traditional pillar of the Australian innovation system. Sydney is home to some of the best universities in the world, a hotbed of new ideas for creating and capturing value, whether through new products, manufacturing efficiencies, optimising organisational designs or creative ways of reaching new markets.

Universities generate knowledge spillovers. Beyond pioneering new products, they can help to attract new knowledge resources from outside the region.³¹ Further, they provide a pool of local talent for businesses and generate ideas that can be put to use by firms.³²

Sydney's universities are spread out across the region, as shown in Chart 1.4.

Universities can perform a vital role in facilitating conversations between local industry practitioners about the potential of new and exciting technologies and markets. These forums often produce ideas that inform future problem-solving in workplaces and universities.²⁹ ➔

Connection and collaboration start here

Ready to innovate and collaborate? With over 1,200 people and 850 start-ups using their space in the last five and a half years, Fishburners is Australia's largest not-for-profit start-up hub.

"The main ingredients for innovation are the things that allow people to try", says Fishburners CEO, Murray Hurps.

"We have one goal which is the creation of new and highly scalable tech start-ups. To achieve that goal we do three things: The first of which is inspiring more people to develop a start-up. We hosted 592 events last year, we do a bit of media, and expose as many potential founders to inspiring content and people as possible. The second thing we do is attract and filter a high-quality population of scalable start-ups.

"The last thing we do is connect those start-ups to support. We don't want to give advice directly. We'd rather bring in people to give advice, and also just connect people to others who might have suggestions. So each month we check in with every single start-up and ask

what they're working on, then suggest some people they should talk to, to increase their surface area."

The creation of a space that maximises interaction between the right people is key to establishing these connections and the chances for networking. Murray describes the design of their physical space, as attempting to "increase the touch points between people." For example, "there's one pathway through the building that everyone has to take – so that does help people collide with each other and have little impromptu catch ups. There's a kind of 'ideas space' in the basement, which has whiteboards, bean bags, an event space, recording studio, coffee machine and restaurant style seating. The idea there is you want people walking through, particularly visitors, in an environment where entrepreneurs are in a

mindset where they're happy to talk. You put 360 people in a building that are all working on scalable start-ups, and suddenly they start to collaborate between themselves organically, rather than because we've forced it.

"Encouraging people to take that risk themselves is a massive problem, but also getting companies to realise that they can isolate the risk certainly, is as well. Anything that allows someone to financially take on the risk of starting up is a massive plus, that allows people to begin, and anything that pushes them harder to succeed upwards would be my key focus areas."

Fishburners supports start-ups by providing them with the physical infrastructure of a carefully-designed workspace and also connections to the opportunities needed to further develop their company. It also

subsidises office costs to roughly half what they would normally be, which again contributes to generating demand that can be filtered to build a high-quality population.

The connectivity of people is central to the Fishburners process, which acts to surround visitors with scalable start-ups. "The biggest restriction to progress in our ecosystem is the number of people who could be watching scalable companies and are not." Murray also mentions the changing market where, "niche companies that you might not find that interesting on day one traditionally, in a year or two can become 10-20 million dollar revenue companies." He sees the best kind of output for Fishburners as the number of start-ups that grow and get to a stage where the hub is no longer appropriate for them.

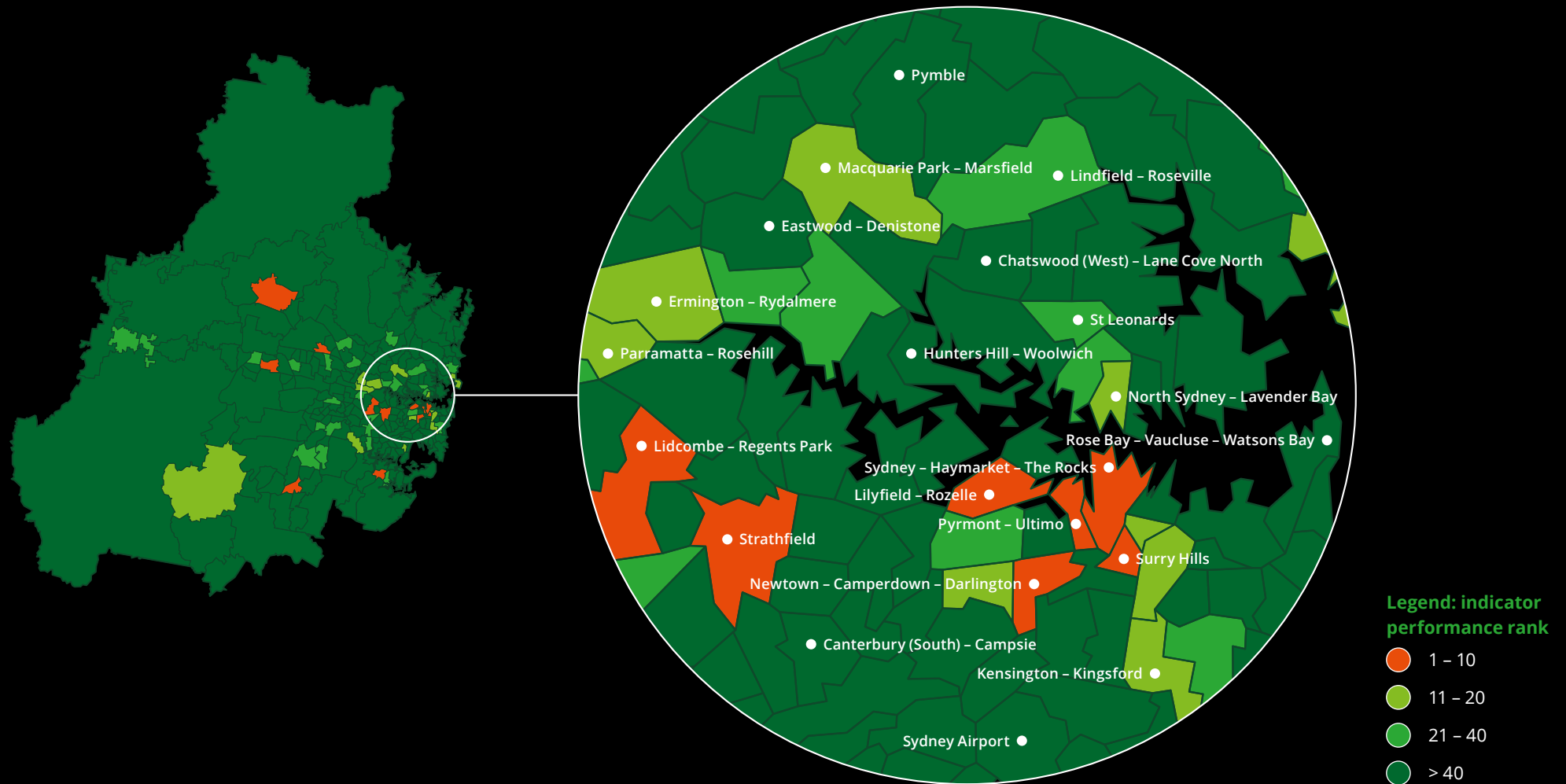


Fishburners



Chart 1.4

Innovative regions by count of universities and TAFEs



Collaboration

We're all familiar with the idea of the garage innovator – one or two people working in isolation to create a new idea or business.

The reality is that most innovation does not happen in a vacuum; nor do organisations commonly innovate by themselves.³³ Many of the most successful examples of creating and capturing value come from people working together, across firms, industries and sectors. A business funding and then commercialising a product designed by a university. A small firm adopting a customer relationship management system used by its big business client. A joint venture between an agricultural business and a food manufacturing business to sell fresh produce to an overseas market.

A firm's capacity to innovate is strengthened by a larger knowledge base, and the sharing of cost and risk that results from external collaboration.²⁶ Bringing together diverse ideas and capabilities can create value for everyone involved.

In practice, it's very difficult to measure collaboration. In the Create Heat Index, we use self-reported collaboration by businesses in different industries; like previous reports on Australia's collaborative ecosystem, we note that, overall, Australia performs relatively poorly on collaboration.

But collaboration might not be so explicit. Sometimes, just opening a conversation can create the spark of an idea – even if it doesn't result in a continuing relationship. A strong network can be the backbone of a collaborative one.

To what extent are we having these conversations? Place is, again, a key part of the story. Sydney is highly dispersed, with a population of five million spread across over 12,300 square kilometres. Despite the role that digital has played in collapsing barriers, it can be hard for a business in the south-east to be familiar with the names of regions in the north-west, let alone knowing what businesses are located there, and which of them might be relevant.

Central meeting points and business events can be instrumental in starting conversations across regions. The new International Convention Centre Sydney, for example, is seen by its CEO, Geoff Donaghy, as a space

that can support innovation and the development of ideas for both attendees and the wider economy (for more detail, visit www.shapingfuturecities.com.au).

To understand the frequency of conversations in Sydney, we worked with the Sydney Business Chamber to conduct a survey of its membership. We asked survey respondents how many external meetings they had on average, how far away these meetings took place, who organised the meetings and with whom they were meeting.

This gave us, for the first time, a picture of how often business leaders and staff have conversations with external organisations, and how this is shaped by geography. Of course, this is not comprehensive; for example, there were no survey respondents in many regions. However, it provided us with a useful starting point.

So, which regions in Sydney are the most likely to have a conversation?

Businesses in areas around the CBD – like Mosman, Pyrmont and Newtown – are most likely to have meetings inside their local region. However, businesses which are further from the CBD are more likely to collaborate outside their local region.

Nourishing all the right spaces

SumoSalad's Green Label store concept is a recent example of the company's innovative and holistic approach, one that has earned it the coveted Australian Innovation Award as part of the Ebeltoft Retail Innovation Awards 2016.

SumoSalad's mission is to make Australia healthier. Launched in 2003, it is now Australia's largest healthy fast food restaurant, with 120 outlets across the nation and the world. Though the business has evolved significantly over the years, the fundamental philosophy to provide great tasting, good quality, and real food to their customers remains the same.

Innovation is a key driver of SumoSalad's success. While remaining true to the company's beliefs and core ethos, it looks to create a physical in-store experience that conveys freshness and redefines the traditional idea of fast food. With its new concept store, SumoSalad has partnered with leaders in the food industry to provide customers with unique offerings such as breakfast jars, charcoal meats, a yoghurt bar and an in-store lettuce wall.

"SumoSalad is delighted to be one of two winners of the Australian Innovation Award for our healthy, eco-friendly and sustainable ethos. It's such a huge achievement and really cements what Sumo stands for," says Luke Baylis, CEO and co-founder.

Another recent innovation is the store-within-a-store retail concept, which can be seen at The Foodary by Caltex. Luke is excited to be part of The Foodary and to help change the way people think of food bought at a service station.

"SumoSalad and Caltex Australia complement each other well. Now, when customers stop to fuel their car, they can also fuel their bodies with tasty, wholesome food." The partnership enables Australians to make healthier food choices while commuting. It also serves local community members who don't otherwise have access to great value, nutritious and energising foods.

SumoSalad is constantly researching local and global food trends as well as customer behaviour to ensure it is evolving and at the forefront of consumer demand. The company works closely with research organisations and the government on a quarterly basis. Lawrence Mitchel, SumoSalad Chief Customer Officer, describes this collaborative approach as a fundamental ingredient to innovation:

"Innovation must be shareable, by taking bits and pieces and forming something even better – that's what makes it contagious."

Given that it operates within the food industry, customer research is especially important to ensure the organisation continues to meet and exceed customer needs and wants. For a quick service restaurant, it is not always about being good – it is about being better, healthier, fresher, and more adventurous. Most importantly it is about always innovating, because SumoSalad sees its customer-orientated approach as its main driver, in that innovation ultimately needs to provide excellent value and be useful to its customers.







It's time to adapt our innovation mindset, because a more innovative city will benefit us all. So how do we get there?

All individuals and every single organisation can innovate, whether in a new context or for the first time. Factors such as density, high-growth potential entrepreneurship, and levels of collaboration play a role and help some areas in Sydney to excel. But there are more growth opportunities waiting to be realised for everyone, no matter *where* or *who* you are – and making the most of them will determine the future of our city and state.

Improving our overall performance requires a concerted effort. By using our diverse capabilities and experiences we can generate new ideas, and help them come to life – painting a powerful picture of what is possible.

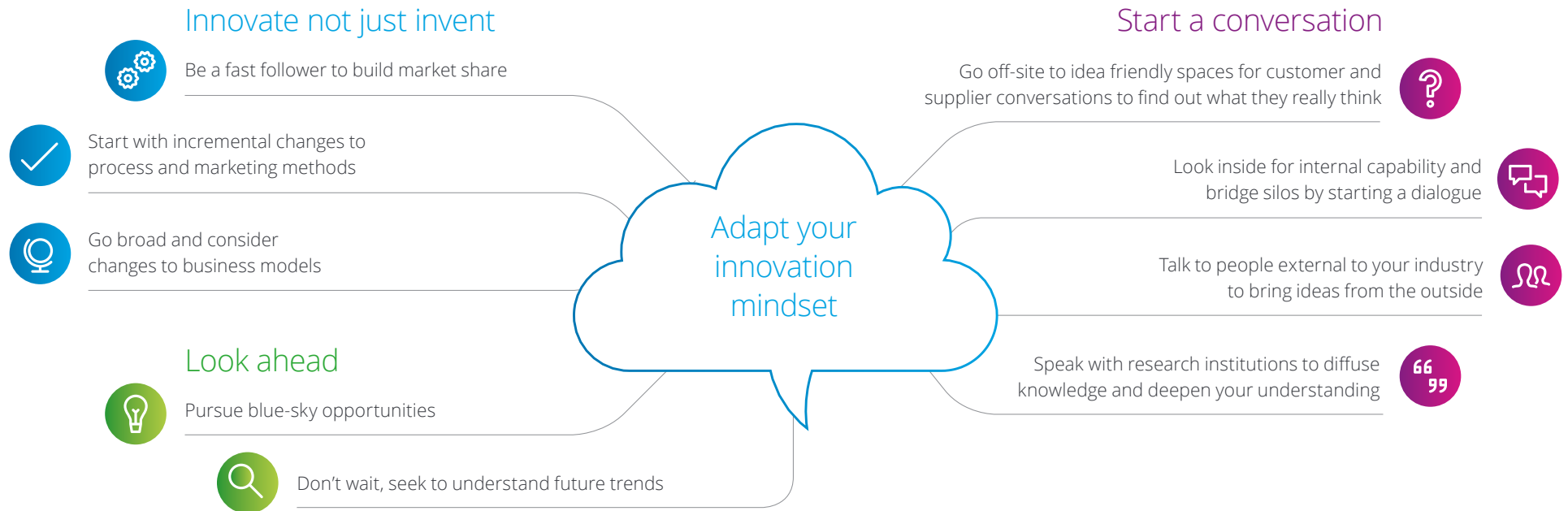
The first step is to change how we think about innovation, as individuals, businesses, and as a city. To shift our perception of what innovation is, and to be better placed to embrace its benefits.

Developing an innovative mindset to create and capture new value will vary from organisation to organisation, individual to individual. In practice, there are no right answers. But the pockets of brilliance are there and the goal is to use our dynamic forces to create virtuous circles of prosperity that pay off.

Everyone has a role to play in making Sydney flourish – individuals, business, research and government. We're all familiar with the success stories of garage innovators, who achieved great things alone. But this is only part of the story. We are most successful when we work together and treat everyone's thinking with equal weight.

To achieve this, we need to start pulling the right levers, right now. ➔

Innovation levers for business



Start a conversation – that’s what we’re talking about

Many reports have identified that Australian businesses and research institutions do not perform well on collaboration. For example, our small-to-medium businesses and large businesses rank 24th and 29th respectively on collaborating in innovation out of 31 OECD countries.¹³

Most businesses and individuals know the value of networks. They can be a source of new ideas, facilitate connections to new markets, and even provide key resources. Collaborating and facilitating connections across an ecosystem can also be important for universities, as highlighted by Roy Green, Dean of the Business School at the University of Technology Sydney (for more information, visit www.shapingfuturecities.com.au).

But establishing these networks – knowing who to reach out to, how to reach them, and how to create a productive and collaborative relationship – can seem like a challenge.

The goal is to start a conversation and start small:

- **Look inside – there’s magic in the mix**
Within any organisation, there are people

with diverse capabilities, experiences, and ideas. Networks displace hierarchies and are far better at facilitating flows of ideas between individuals and teams – so bridge the silos and look beyond business functions and levels.

- **Look up *and* down – there’s other weight in the chain**

Your suppliers know your needs and can offer an external and objective perspective on your industry. And your customers know your products, and what provides value to them. Both can provide critical insight and new ideas.

- **Look around – there’s power in the periphery**

Trends outside your industry can be instructive. Be imaginative and open about how research institutions and other organisations in your sector, or in adjacent industries, could provide value. What does best practice look like in another sector?

- **Connect the dots – there’s more than one picture**

Your insights and networks can add value to others. Seemingly disparate ideas can come together to produce a service, solution or innovation that is new and exciting. How can you diffuse the knowledge you have in a broader context?

The truth is, we can easily access the benefits of collaboration – if we’re more open to conversations. The knowledge economy is strong, and its resources are closer and more accessible than you think.

There’s a larger *internal* knowledge capability within your own organisation than most people realise, so try crossing the floor and asking for the skill set you need, or sitting with another team for a week and talking to them about their capabilities and experience. Get off-site with your customers and suppliers, have less formal conversations, and find out what they really believe. Open a dialogue of ideas. And finally, realise that research isn’t just for scientists. Go and find out what’s being explored at the cutting edge – in your industry and outside of it.

Innovate, not just invent – evolution, not just revolution

We've all heard of Sydney's great inventions – from the first digital sampler, the Fairlight CMI, to Google Maps.

But as we've seen, innovation is not just about invention. The Australian Bureau of Statistics reported that in 2014-15, Australian businesses were almost as likely to report introducing new or significantly improved operational processes (16%), managerial processes (17%) or marketing methods (17%) as they were to introduce new goods or services (19%).

And not all innovation is revolutionary. Most innovation in Australian businesses is more incremental than dramatic. In fact, about three-quarters of introduced innovations are only new to the business itself; in contrast, only 2% of businesses think that their operational, organisational or marketing innovations are new to the world.³⁴

These incremental innovations can add up. For example, RØDE (a designer and manufacturer of quality microphones and audio equipment based in Silverwater) started with making small improvements to an imported microphone; today, it exports over a million microphones annually (for more details, visit www.shapingfuturecities.com.au).

Knowing where to innovate is just as important as knowing how to innovate. Good design comes from great insight; the most successful innovations will solve a client and/or market need.

So how can a non-innovator start to create and capture new value? And how can innovators keep their momentum?

- **Keep your eyes and ears open – and your feet fast**

Things that have worked in other circumstances may work well for you. What's happening in your industry overseas? What are businesses implementing in other industries? By being informed and adaptable, with a strong network both locally and globally, you can be a fast follower and build market share

- **Iterate to innovate – no need to risk it all**

Large changes made quickly can be disruptive and have uncertain returns. Instead, start with incremental change. By testing, trialling and refining new ideas iteratively, you can build a capacity to innovate without the need to take big risks

- **More than just product – broad is the new black**

Some of the most disruptive and successful innovations in our economy in recent years have not been new products, but new business models – like collaborative economy platforms. Think more broadly about how you can implement new ways of capturing value, whether that be through organisational change, improved processes or new ways of reaching customers.

We are generally innovation followers, rather than innovation leaders. By adapting and adopting ideas from elsewhere we can still deliver great results. According to the Australian Innovation System report, the average gross operating profit for new-to-business innovators is \$297,000 – more than double the average profit of non-innovators.

Make it a habit to regularly scan and pick the best bits from other industries, taking advantage where others, overseas or elsewhere, have already done the hard yards – and integrate those elements straight into your business.

Look ahead – the future is trending

Looking to the past can provide great perspective and lessons. But the future is evolving rapidly – and by looking over our shoulder, we risk being left behind. We need to lift our gaze to the horizon and think longer-term. For example, the Commonwealth Bank of Australia has an emerging technology division, which aims to keep the bank at the forefront of technology in the financial sector by identifying and experimenting with emerging technologies (for more details on innovation and fore-sighting at the Commonwealth Bank, visit www.shapingfuturecities.com.au).

- **What's likely? – don't wait for it**

Think about the emerging trends in your industry, and how they might affect your business. Are customer preferences shifting? Are employees seeking more flexibility? Understanding the needs and pressure points for key stakeholders will help you be responsive

- **What's possible? – get value out of the blue**

Beyond what's likely to happen, it's also important to expect the unexpected. Who are the key disruptors – and what would happen if they became dominant in the industry? How could emerging technologies shape your competitive advantage? Thinking about the blue-sky possibilities and counterintuitive outcomes can uncover opportunities for you and your own business.

Understand the megatrends shaping our future, and you will be better placed to take the necessary steps now to be prepared for the next decade and beyond.

Innovation levers for government

Attract and retain to make the mix a match



Build a location brand by establishing clear messaging around the best place to be for industry



Evidence suggests that diversity of like-minded businesses facilitates greater connectivity



Knowing your specialisations and what industries are dense in employment hotspots is essential to providing the right connections

Step aside – and take your red tape



Regularly re-assess the cumulative body of regulation to help identify those that are outdated or no longer meet goals



A graduated regulatory framework balances the need for regulation with the flexibility to innovate

Identify and enable to emerge ahead

Understand where government assistance provides the best outcomes and returns – then prioritise



Get your infrastructure and planning regulation right for nurturing innovation



Look to the factors that create today's hot pockets to forecast where tomorrow's will be



Identify key areas where innovative activity is happening and measure with a consistent, quantifiable and numerical approach



Adapt your innovation mindset

Identify and enable to emerge ahead

The best innovation precincts worldwide are overwhelmingly organic. Most often they are the result of serendipity, rather than design.

Government already uses a range of important tools – from urban planning and design to tender processes – to set new commercial areas up for success. For example, the Federal Government's Australian Nuclear Science and Technology Organisation has recently announced its intention to develop an innovation precinct based in Lucas Heights (for more details, visit www.shapingfuturecities.com.au).

But we need to look beyond greenfield developments to what's already happening – and where more activity may emerge in the future. The NSW Government's knowledge hub program has already identified four key innovation areas in Sydney. But our analysis shows that there are more emerging – and sometimes in unexpected places.

How can government enable existing innovation – and help new areas emerge?

- **Quantify – know your numbers**

Identify key areas where innovation activity is happening – not through case studies or ad-hoc methodologies, but with a consistent and numerical approach. What makes these areas special? What is working, and is there room for further growth?

- **Prioritise – bang for your buck**

Innovation happens everywhere – and there is the potential to improve in every area. Understand where government assistance would provide the best outcomes and returns

- **Forecast – warm tomorrow**

We know where today's hot pockets are – but how about tomorrow's? The factors that have facilitated the success of today's hot pockets are a useful starting point

- **Facilitate – change your settings**

The right infrastructure and planning regulations can help innovative regions grow more strongly and spread their knowledge – from roads, public transport, and broadband to public amenity, density and permits. Policy settings can help innovation precincts to thrive by making them more attractive places to live, work, play and create.

Turrella benefits from its proximity to Sydney's current international and domestic airports.

The development of a new Western Sydney airport at Badgerys Creek offers significant potential for Sydney Science Park, located only three kilometres to the north. It could become a significant epicentre for science, research and development.

Similarly, the Bays Precinct benefits from proximity to knowledge hubs in the CBD. Further, it is slated to attract key institutions and a knowledge intense workforce. This could see areas such as Balmain and Rozelle develop into future hot pockets.

Attract and retain to make the mix a match

An agglomeration of the right people, businesses and institutions in the same location can support a vibrant local innovation system. Large organisations and collaborative researchers can be a magnet for others, creating a virtuous circle.

But it can be hard for businesses and research institutions to understand where they should locate to – and why.

So, how can government help precincts grow by attracting and retaining the right mix of businesses and institutions?

- **Know your specialisations** – Understanding what types of activity occur in which regions is critical to providing the right connections. Start by knowing which industries and sub-industries are relatively dense in employment hotspots

- **Complementarity is key** – Co-locating businesses of the same industry is not always the solution. In some cases competitors may be less likely to work together. Instead, evidence suggests that a diversity of like-minded businesses can facilitate greater connectivity. Could an incumbent financial services provider attract and support an ecosystem of small professional services firms? How about co-locating small-scale agribusinesses with food manufacturers and cafés? Understanding supply chains, and complementarities, will support richer and more vibrant precincts

- **Build a location brand** – Businesses may find it difficult to identify and assess what happens where. Establishing clear messaging around the best place to be for various industries can support business decision-making and attract investment, particularly from interstate or overseas.

Step aside – and take your red tape

Regulation is important to the overall functioning of our economy. Amongst other things, it helps to ensure consumers are protected, products are safe, and our businesses are competitive.

But it's important to recognise that regulation and compliance can also create costs, and that red tape can soak up valuable time and resources.³⁵ Rules and regulations imposed by all levels of government cost an estimated \$27 billion a year to administer, and a further \$67 billion a year to comply with.³⁶

And in some instances, regulation can penalise or even prohibit innovative activity – from new business models like Uber, to new products like digitally-delivered financial advice.

The challenge is to facilitate innovation, while maintaining minimum standards and consumer protection:

- **Graduate regulation** – Critical areas of the economy that influence our economic stability (like financial services), our environment (like mining and agriculture) and our safety (like retail and manufacturing) are rightly regulated. A graduated regulatory framework balances the need for regulation with the flexibility to enable innovation, by applying stronger regulations to critical incumbents, but allowing more flexibility for new disruptors, which becomes stricter as they grow.
- **Regularly reassess** – Regulations can accumulate quickly but dissipate slowly. Regularly re-assessing the cumulative body of regulation as it applies to a given industry can help to identify regulations that are outdated or no longer meet their desired goals.

Maintaining momentum

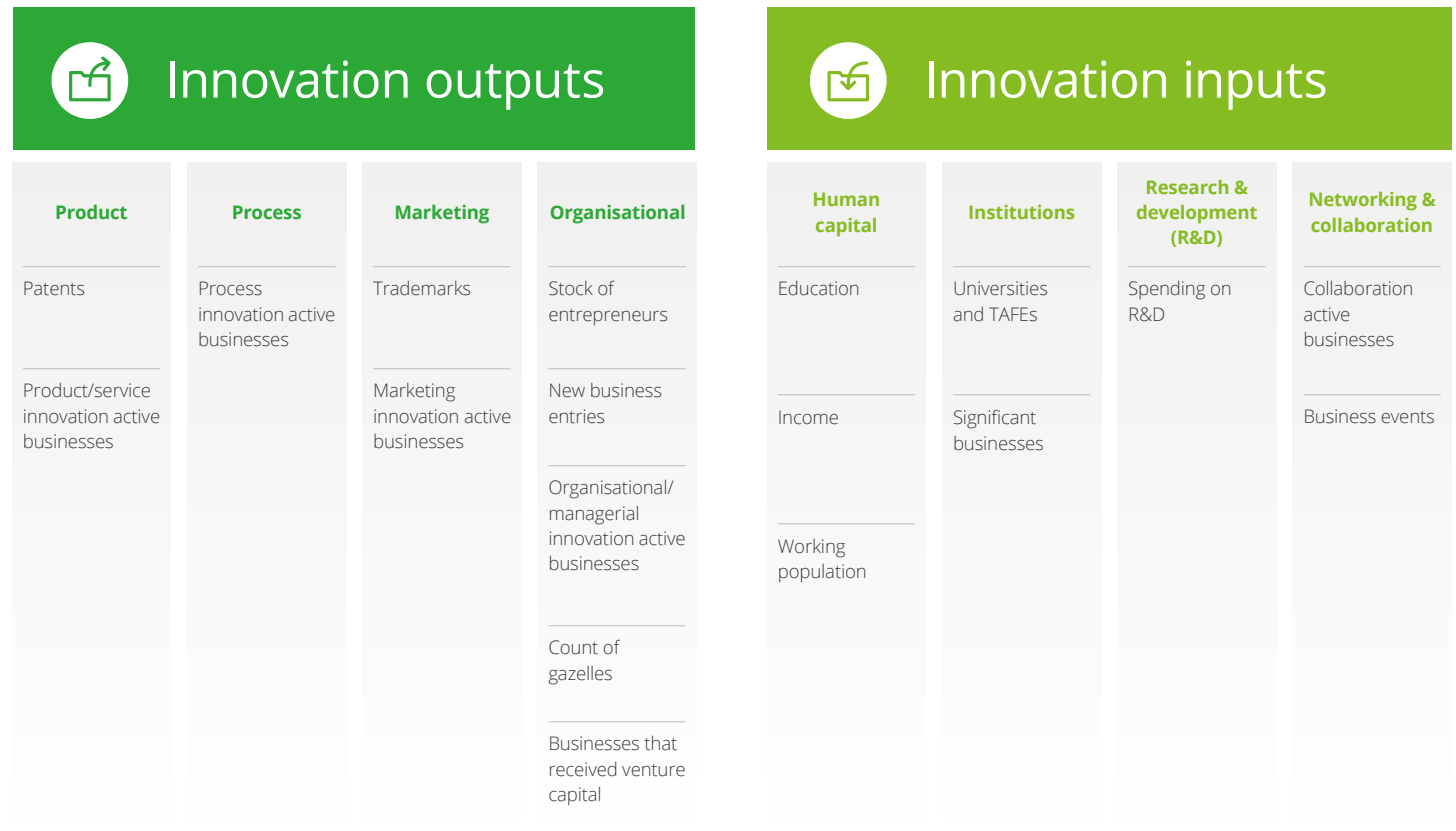
Productivity growth through innovation – the implementation of smart ideas – is a huge opportunity for the future state and prosperity of Sydney, and the nation. But it requires a collaborative effort. It's time to take a closer look at what innovation means to our city, and to rethink the way we embed it in how we *Create*.

Appendix: the Create Heat Index

The innovation detail in this edition of Deloitte's **Imagine**Sydney series has drawn on Deloitte's Create Heat Index, our experts, and the breadth of reports that have been created by government, industry and innovation experts over the past decade.

Please refer to www.shapingfuturecities.com.au for detailed appendices.

Composition of the Create Heat Index



Making use of innovation expertise

It is important to consider not just how innovation occurs within a given category, but how ideas are created and spread across a broader innovation system.

Starting with Marshall's economies of agglomeration in the late 19th century, there is a large body of literature that discusses the importance of place in determining business success. In 1990, Michael Porter's *Competitive Advantage of Nations* defined clusters as "groups of interconnected firms, suppliers, related industries and specialised institutions in particular fields that are present in particular locations."

Clusters create competitive advantage. Thus, we focus our analysis on the performance of regions – their ability to generate new ideas and to implement them.

The Create Heat Map

Deloitte's Create Heat Map is a graphical representation of the Create Heat Index (CHI). CHI was created by Deloitte Access Economics with expert input from the University of Technology Sydney. It considers two dimensions of innovation: outputs and inputs.

Indicators used in the analysis

The map is based on 18 indicators that could affect a region's demonstrated performance on deriving and implementing new or substantially improved ideas, or alternatively its capacity to do the same. It also collates subjective judgement from industry and content experts at Deloitte, based on our in-depth experience, judgement and market knowledge.

This approach is designed to be improved upon over time to help Sydney's individuals, businesses and government think about innovation at a more granular level.

Aggregation methodology

In bringing together multiple indicators to develop the Create Heat Index, assigning weightings to indicators is a crucial task that must be undertaken with caution. This study has looked to the OECD's 2008 Handbook on Constructing Composite Indicators for potential methodologies to be utilised. The OECD lists seven weighting methods. This study tested two of these aggregation methodologies, namely the Average Weighted Method (AWM) and the Analytical Hierarchy Method (AHP) involving a multi-criteria decision approach. For the purposes of this report, the AHP method was chosen.

Full details on the aggregation methodology are available at www.shapingfuturecities.com.au

Create Heat Index

A detailed breakdown

Area	Overall Score	Product innovation	Process innovation	Marketing innovation	Organisational innovation	Outputs	Human capital	Institutions	Research & development	Networking & collaboration	Inputs
North Ryde – East Ryde	100	100	100	100	100	100	100	100	100	100	100
Sydney – Haymarket – The Rocks	100	100	100	100	100	100	100	100	100	100	100
Macquarie Park – Marsfield	85	85	85	85	85	85	85	85	85	85	85
North Sydney – Lavender Bay	81	81	81	81	81	81	81	81	81	81	81
Pymont – Ultimo	76	76	76	76	76	76	76	76	76	76	76
Neutral Bay – Kirribilli	76	76	76	76	76	76	76	76	76	76	76
Erskineville – Alexandria	75	75	75	75	75	75	75	75	75	75	75
Surry Hills	75	75	75	75	75	75	75	75	75	75	75
Redfern – Chippendale	75	75	75	75	75	75	75	75	75	75	75
St Leonards – Naremburn	72	72	72	72	72	72	72	72	72	72	72
Arncliffe – Bardwell Valley	71	71	71	71	71	71	71	71	71	71	71
Chatswood (West) – Lane Cove North	70	70	70	70	70	70	70	70	70	70	70
Darlinghurst	70	70	70	70	70	70	70	70	70	70	70
Ermington – Rydalmere	70	70	70	70	70	70	70	70	70	70	70
Chullora	69	69	69	69	69	69	69	69	69	69	69
Oatlands – Dundas Valley	68	68	68	68	68	68	68	68	68	68	68
Coogee – Clovelly	67	67	67	67	67	67	67	67	67	67	67
Willoughby – Castle Cove – Northbridge	67	67	67	67	67	67	67	67	67	67	67
Glebe – Forest Lodge	67	67	67	67	67	67	67	67	67	67	67
Homebush Bay – Silverwater	67	67	67	67	67	67	67	67	67	67	67
Waterloo – Beaconsfield	67	67	67	67	67	67	67	67	67	67	67
Potts Point – Woolloomooloo	67	67	67	67	67	67	67	67	67	67	67
Lane Cove – Greenwich	66	66	66	66	66	66	66	66	66	66	66
Horsley Park – Kemps Creek	65	65	65	65	65	65	65	65	65	65	65
Bondi – Tamarama – Bronte	65	65	65	65	65	65	65	65	65	65	65
Wahroonga – Warrawee	64	64	64	64	64	64	64	64	64	64	64
Cremona – Cammeray	64	64	64	64	64	64	64	64	64	64	64
Chatswood (East) – Artarmon	63	63	63	63	63	63	63	63	63	63	63
Monterey – Brighton-Le-Sands – Kyeemagh	63	63	63	63	63	63	63	63	63	63	63
Hunters Hill – Woolwich	63	63	63	63	63	63	63	63	63	63	63
North Rocks	63	63	63	63	63	63	63	63	63	63	63
Mosman	63	63	63	63	63	63	63	63	63	63	63
Roselands	63	63	63	63	63	63	63	63	63	63	63
Eastwood – Denistone	63	63	63	63	63	63	63	63	63	63	63
St Ives	62	62	62	62	62	62	62	62	62	62	62
Smithfield Industrial	62	62	62	62	62	62	62	62	62	62	62
Crows Nest – Waverton	62	62	62	62	62	62	62	62	62	62	62
Kingsgrove (North) – Earlwood	61	61	61	61	61	61	61	61	61	61	61
Botany	61	61	61	61	61	61	61	61	61	61	61
Glenhaven	61	61	61	61	61	61	61	61	61	61	61
Double Bay – Bellevue Hill	61	61	61	61	61	61	61	61	61	61	61
Newport – Bilgola	61	61	61	61	61	61	61	61	61	61	61
Concord West – North Strathfield	61	61	61	61	61	61	61	61	61	61	61
Lidcombe – Regents Park	61	61	61	61	61	61	61	61	61	61	61
Concord – Mortlake – Cabarita	60	60	60	60	60	60	60	60	60	60	60
Condell Park	60	60	60	60	60	60	60	60	60	60	60
West Ryde – Meadowbank	60	60	60	60	60	60	60	60	60	60	60
Mascot – Eastlakes	60	60	60	60	60	60	60	60	60	60	60
Paddington – Moore Park	60	60	60	60	60	60	60	60	60	60	60
Newtown – Camperdown – Darlington	60	60	60	60	60	60	60	60	60	60	60
Lilyfield – Rozelle	60	60	60	60	60	60	60	60	60	60	60
Box Head – MacMasters Beach	60	60	60	60	60	60	60	60	60	60	60
Haberfield – Summer Hill	59	59	59	59	59	59	59	59	59	59	59
Greenacre – Mount Lewis	59	59	59	59	59	59	59	59	59	59	59
Gordon – Killara	59	59	59	59	59	59	59	59	59	59	59
Guildford – South Granville	59	59	59	59	59	59	59	59	59	59	59
Fairfield East	58	58	58	58	58	58	58	58	58	58	58
Padstow	58	58	58	58	58	58	58	58	58	58	58
Pymble	58	58	58	58	58	58	58	58	58	58	58
Greystanes – Pemulwuy	58	58	58	58	58	58	58	58	58	58	58
Balmain	58	58	58	58	58	58	58	58	58	58	58
Drummoyne – Rodd Point	58	58	58	58	58	58	58	58	58	58	58
Leichhardt – Annandale	57	57	57	57	57	57	57	57	57	57	57
Frenchs Forest – Belrose	57	57	57	57	57	57	57	57	57	57	57

Appendix: the Create Heat Index

Area	Overall Score	Product innovation	Process innovation	Marketing innovation	Organisational innovation	Outputs	Human capital	Institutions	Research & development	Networking & collaboration	Inputs
Erina – Green Point	43	██████	██████	██████	██████	██████	██████			██████	██████
Castle Hill	43	██████	██████	██████	██████	██████	██████			██████	██████
Greenfield Park – Prairiewood	42	██████	██████	██████	██████	██████	██████		█	██████	██████
Pitt Town – McGraths Hill	42	██████	██████	██████	██████	██████	██████			██████	██████
Bilpin – Colo – St Albans	42	██████	██████	██████	██████	██████	██████			██████	██████
The Oaks – Oakdale	42	██████	██████	██████	██████	██████	██████			██████	██████
Panania – Milperra – Picnic Point	42	██████	██████	██████	██████	██████	██████	█		██████	██████
Woy Woy – Blackwall	42	██████	██████	██████	██████	██████	██████			██████	██████
Leumeah – Minto Heights	42	██████	██████	██████	██████	██████	██████			██████	██████
Heathcote – Waterfall	42	██████	██████	██████	██████	██████	██████		█	██████	██████
Blacktown (North) – Marayong	42	██████	██████	██████	██████	██████	██████			██████	██████
Penrith	42	██████	██████	██████	██████	██████	██████	█		██████	██████
Warnervale – Wadalba	42	██████	██████	██████	██████	██████	██████			██████	██████
Gosford – Springfield	42	██████	██████	██████	██████	██████	██████	█		██████	██████
Lake Munmorah – Mannering Park	42	██████	██████	██████	██████	██████	██████			██████	██████
Parklea – Kellyville Ridge	42	██████	██████	██████	██████	██████	██████			██████	██████
Umina – Booker Bay – Patonga	41	██████	██████	██████	██████	██████	██████			██████	██████
Engadine – Loftus	41	██████	██████	██████	██████	██████	██████			██████	██████
Camden – Ellis Lane	41	██████	██████	██████	██████	██████	██████			██████	██████
Burwood – Croydon	41	██████	██████	██████	██████	██████	██████			██████	██████
Menai – Lucas Heights – Woronora	41	██████	██████	██████	██████	██████	██████			██████	██████
Bondi Junction – Waverley	41	██████	██████	██████	██████	██████	██████			██████	██████
Gorokan – Kanwal – Charmhaven	41	██████	██████	██████	██████	██████	██████			██████	██████
Mount Annan – Currans Hill	41	██████	██████	██████	██████	██████	██████			██████	██████
Riverstone – Marsden Park	41	██████	██████	██████	██████	██████	██████			██████	██████
Bass Hill – Georges Hall	41	██████	██████	██████	██████	██████	██████			██████	██████
Fairfield	40	██████	██████	██████	██████	██████	██████		█	██████	██████
Canterbury (North) – Ashbury	40	██████	██████	██████	██████	██████	██████		█	██████	██████
Kingswood – Werrington	40	██████	██████	██████	██████	██████	██████	█		██████	██████
Summerland Point – Gwandalan	40	██████	██████	██████	██████	██████	██████			██████	██████
Quakers Hill – Acacia Gardens	40	██████	██████	██████	██████	██████	██████	█		██████	██████
Granville – Clyde	40	██████	██████	██████	██████	██████	██████	█		██████	██████
Mount Druitt – Whalan	40	██████	██████	██████	██████	██████	██████	█		██████	██████
Green Valley – Cecil Hills	40	██████	██████	██████	██████	██████	██████			██████	██████
St Clair	40	██████	██████	██████	██████	██████	██████			██████	██████
Ourimbah – Fountaindale	39	██████	██████	██████	██████	██████	██████	█		██████	██████
Wentworth Falls	39	██████	██████	██████	██████	██████	██████	█		██████	██████
Castlereagh – Cranebrook	39	██████	██████	██████	██████	██████	██████			██████	██████
Revesby	39	██████	██████	██████	██████	██████	██████			██████	██████
Fairfield West	39	██████	██████	██████	██████	██████	██████		█	██████	██████
The Entrance	39	██████	██████	██████	██████	██████	██████			██████	██████
Kincumber – Picketts Valley	39	██████	██████	██████	██████	██████	██████		█	██████	██████
Cobbitty – Leppington	39	██████	██████	██████	██████	██████	██████			██████	██████
South Hurstville – Blakehurst	38	██████	██████	██████	██████	██████	██████			██████	██████
Canley Vale – Canley Heights	38	██████	██████	██████	██████	██████	██████			██████	██████
Cambridge Park	38	██████	██████	██████	██████	██████	██████			██████	██████
Springwood – Winmalee	38	██████	██████	██████	██████	██████	██████			██████	██████
Blue Haven – San Remo	38	██████	██████	██████	██████	██████	██████			██████	██████
Port Botany Industrial	38	██████	██████	██████	██████	██████	██████			██████	██████
Rosemeadow – Glen Alpine	38	██████	██████	██████	██████	██████	██████		█	██████	██████
Blue Mountains – South	38	██████	██████	██████	██████	██████	██████			██████	██████
Glenmore Park – Regentville	37	██████	██████	██████	██████	██████	██████			██████	██████
Blaxland – Warrimoo – Lapstone	37	██████	██████	██████	██████	██████	██████			██████	██████
Richmond – Clarendon	37	██████	██████	██████	██████	██████	██████	█		██████	██████
Hassall Grove – Plumpton	37	██████	██████	██████	██████	██████	██████			██████	██████
Wyong	36	██████	██████	██████	██████	██████	██████	█		██████	██████
Bonnyrigg Heights – Bonnyrigg	35	██████	██████	██████	██████	██████	██████		█	██████	██████
Mulgoa – Luddenham – Orchard Hills	35	██████	██████	██████	██████	██████	██████			██████	██████
Ashcroft – Busby – Miller	35	██████	██████	██████	██████	██████	██████	█		██████	██████
Kariong	34	██████	██████	██████	██████	██████	██████			██████	██████
Lethbridge Park – Tregear	34	██████	██████	██████	██████	██████	██████		█	██████	██████
Yarramundi – Londonderry	34	██████	██████	██████	██████	██████	██████			██████	██████
Narara	33	██████	██████	██████	██████	██████	██████			██████	██████
Claymore – Eagle Vale – Raby	32	██████	██████	██████	██████	██████	██████			██████	██████
St Johns Park – Wakeley	31	██████	██████	██████	██████	██████	██████		█	██████	██████
Holsworthy – Wattle Grove	31	██████	██████	██████	██████	██████	██████			██████	██████
Bradbury – Wedderburn	31	██████	██████	██████	██████	██████	██████		█	██████	██████
Sydney Airport	31	██████	██████	██████	██████	██████	██████		█	██████	██████
Bidwill – Hebersham – Emerton	30	██████	██████	██████	██████	██████	██████		█	██████	██████
Royal National Park	24	██████	██████	██████	██████	██████	██████			██████	██████
Rookwood Cemetery	14	█	█	█	█	█	█			█	█
Holsworthy Military Area	0										

References

- 1 Hanna, K. (2016). *Spaces To Think: Innovation Districts And The Changing Geography Of London's Knowledge Economy*. Centre for London. Available at: http://www.centreforlondon.org/wp-content/uploads/2016/08/J4234CFL_Innovation_Districts_WEB.pdf
- 2 Gordon, J., Zhao, S. and Gretton, P. (2015). *On Productivity: Concepts and Measurement*. Productivity Commission Staff Research Note. Available at: <http://www.pc.gov.au/news-media/pc-news/pc-news-may-2015/productivity-and-how-measured/productivity-and-how-measured-pc-news-201505.pdf>
- 3 Deloitte Access Economics (2016). *Westpac Businesses of Tomorrow Report*. Available at: <https://www2.deloitte.com/au/en/pages/economics/articles/businesses-of-tomorrow-westpac.html>
- 4 Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2011). Does management matter? Evidence from India (No. w16658). *National Bureau of Economic Research*.
- 5 Green, R. (2009). *Management Matters in Australia: Just how productive are we?*, Commissioned by the Department of Innovation, Industry, Science and Research..
- 6 Huergo, E., & Jaumandreu, J. (2004). Firms' age, process innovation and productivity growth. *International Journal of Industrial Organization*, 22(4), 541-559.
- 7 V. Kumar, Rajkumar Venkatesan, Werner Reinartz (2008) *Performance Implications of Adopting a Customer-Focused Sales Campaign*. *Journal of Marketing*: September 2008, Vol. 72, No. 5: <http://blogs.darden.virginia.edu/venkatesanr/files/2012/07/jm-customer-focused-sales-08.pdf>
- 8 Soames, L., Bruncker, D., & Talgaswatta, T. (2011). *Competition, Innovation and Productivity in Australian Businesses*. Productivity Commission and Australian Bureau of Statistics.
- 9 Lowe, P. (2013). Speech to the IARIW-UNSW Conference on Productivity Measurement, Drivers and Trends. Available at: <http://www.rba.gov.au/speeches/2013/sp-dg-261113.html>
- 10 Commonwealth of Australia, Department of the Prime Minister and Cabinet (2015). *National Innovation and Science Agenda: Welcome to the Ideas Boom*.
- 11 Palmer, C., Shilton, D., Jeyaratnam, E., & Mountain, W. (2015). *Australia's Innovation Problem Explained in 10 Charts*. The Conversation. Available at: <http://theconversation.com/australias-innovation-problem-explained-in-10-charts-51898>
- 12 NSW Government (2015). *Bringing Ideas to Life: NSW Innovation Strategy*.
- 13 Commonwealth of Australia, (2016). *Australian Innovation System Report*.
- 14 Office of the Chief Economist (2016) *Australian innovation System Report*. Available at: <https://industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/Australian-Innovation-System/2016-AIS-Report.pdf>
- 15 Deloitte Access Economics (2015) *The Connected Continent II: How digital technology is transforming the Australian economy*.
- 16 M. Khan and K. Luintel, *Sources of Knowledge and Productivity: How Robust is the Relationship?* STI Working Paper 2006/6 (Paris: OECD, 2006).
- 17 Ulku, H. (2004). *RandD, innovation, and Economic Growth: An Empirical Analysis* (No. 4-185). International Monetary Fund.
- 18 Wong, P.K., Ho, Y.P. and Autio, E. (2005). *Entrepreneurship, innovation and economic growth: Evidence from GEM data*. *Small business economics*, 24(3), pp.335-350.
- 19 Australian Bureau of Statistics (n.d.). Business Longitudinal Database.
- 20 \$20.6b in the 2016-17 budget overview: NSW Government (2016) Budget Overview, NSW Budget 2016-17. Available at: http://www.budget.nsw.gov.au/_data/assets/pdf_file/0007/128545/NSW_2016-17_Budget_Overview.pdf
- 21 Deloitte Access Economics (2016) *Economic and social value of improved water quality at Sydney's coastal beaches*. Available at: <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economic-social-value-improved-water-quality-sydneys-coastal-beaches-140716.pdf>
- 22 Commonwealth Bank (2015) *Commonwealth Bank to move 10,000 people to state-of-the-art workplace at Australian Technology Park by 2020*, Media Release, Thursday 12 November 2015. Available at: <https://www.commbank.com.au/about-us/news/media-releases/2015/commonwealth-bank-to-move-ten-thousand-people.html>
- 23 Ciccone, A., and Hall, R. (1996). *Productivity and the Density of Economic Activity*. *The American Economic Review*, 86(1), pp. 54-70.
- 24 Carlino G.A., Chaterjee, S. and Hunt R.M. (2007). *Urban density and the rate of invention*. *Journal of Urban Economics*, 61(3), 389-419.
- 25 Agrawal, A. and Cockburn, I. (2003). *The Anchor Tenant Hypothesis: exploring the role of large, local, R&D-intensive Firms in regional innovation systems*. *International journal of industrial organisation* 21(9), 1227-1253.
- 26 EU Cluster Observatory. Available at: <http://www.clusterobservatory.org/index.html>
- 27 IBISWorld, AU Market Research Reports & Analysis, Clients1.ibisworld.com.au: <http://clients1.ibisworld.com.au/reports/au/companylists/default.aspx?slid=5>
- 28 Friar, J.H. and Meyer, M.H. (2003). *Entrepreneurship and Start-Ups in the Boston Region: Factors Differentiating High Growth Ventures from Micro-Ventures*. *Small Business Economics*, 21, 145-152.
- 29 Acs, Z.J. and Mueller, P. (2008). *Employment effects of business dynamics: Mice, Gazelles and Elephants*. *Small Business Economics*, 30, 85-100.
- 30 Anyadike-Danes, M., Bonner, K., Hart, M. and Mason, C. (2009). *Measuring business growth: high growth firms and their contribution to employment in the UK*.
- 31 Lester, R.K. (2005). *Universities, innovation, and the competitiveness of local economies*. A summary Report from the Local Innovation Systems Project: Phase I. Massachusetts Institute of Technology, Industrial Performance Center, Working Paper Series.
- 32 Bramwell, A. and Wolfe, D.A. (2008). Universities and regional economic development: The entrepreneurial University of Waterloo. *Research Policy*, 37(8), 1175-1187.
- 33 Freel, M.S. (2003). Sectoral patterns of small firm innovation, networking and proximity. *Research Policy*, 32, 751-770.
- 34 ABS (2016). Innovation in Australian Businesses, cat. no. 8158.0.
- 35 Business Council of Australia (2012). *Australia's innovation imperative*. <https://www2.deloitte.com/au/en/pages/strategy/articles/bca-innovation-imperative-report.html>
- 36 Deloitte Access Economics (2014). *Get out of your own way: Unleashing Productivity*. Building the Lucky Country #4.

A special thanks to our contributors

Deloitte.
Access Economics

Deloitte Access Economics

Kathryn Matthews
Jessica Mizrahi
Rumesh Stoner
Will Walker



Sydney Business Chamber

The Hon. Patricia Forsythe
Paul Orton
Luke Aitken

**UTS
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University of Technology Sydney

Professor Roy Green
Associate Professor Renu Agarwal
Associate Professor Christopher Bajada
Dr Maruf Chowdhry
Dr Sanjoy Paul
Mr Stephen Mikhael Soco

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