Resilient Sydney

A strategy for city resilience 2018

RESILIENT SYDNEY | 100 RESILIENT CITIES

Participating councils of metropolitan Sydney

Organisations facilitating flagship content

Resilient Sydney: A strategy for city resilience

Resilient Sydney 2018©

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Resilient Sydney is an initiative of 100 Resilient Cities, pioneered by the Rockefeller Foundation. The initiative is a collaboration of the metropolitan Councils of Sydney and has been governed by a metropolitan steering committee. The Resilient Sydney initiative is hosted by the City of Sydney.

Cover image Sydney Harbour Bridge. Photo: iStock/Boyloso

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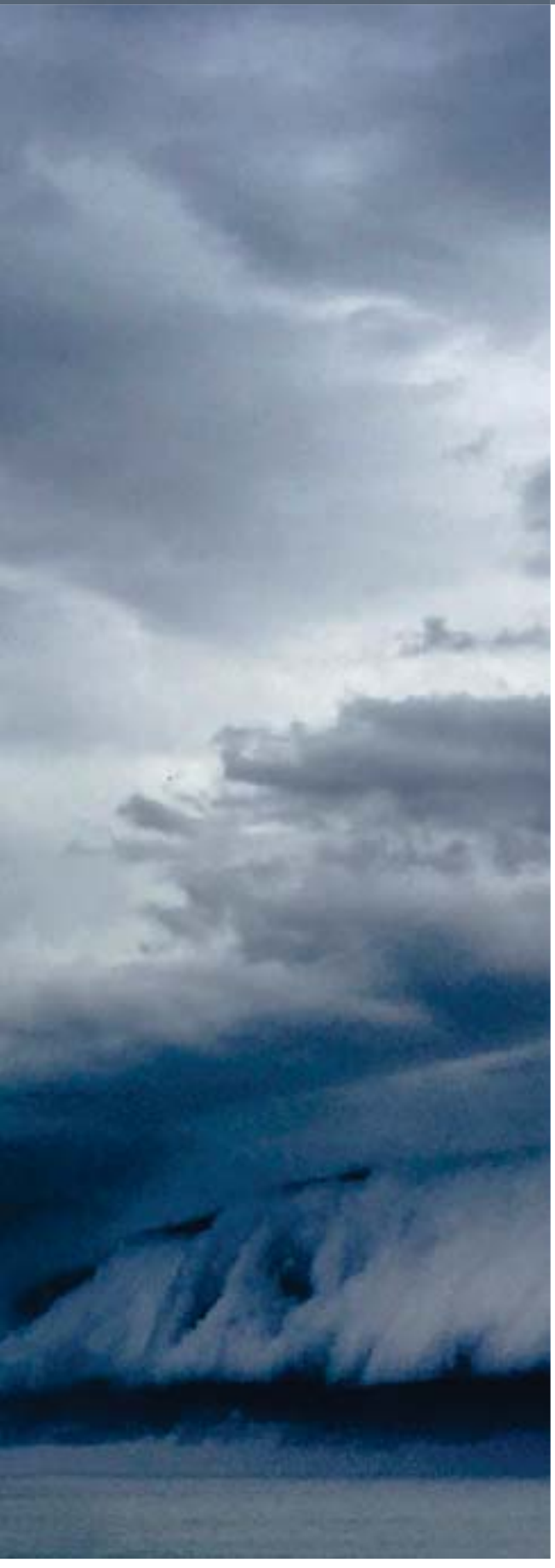

Above Bondi: Approaching storm off Sydney's coast.
Photo: iStock/lovro77

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RESILIENT SYDNEY | 100 RESILIENT CITIES

Acknowledgement of Country

Resilient Sydney acknowledges Aboriginal and Torres Strait Islander peoples as the First People and traditional custodians of the land and waters of this place we now call Sydney.

Aboriginal peoples continue to show great resilience and generosity of spirit towards other peoples with whom they now share their land and waters. Resilient Sydney recognises that by acknowledging our shared past, we are paving the way for a future where all Australians are embraced.

To be resilient Sydney needs a future based on mutual respect and shared responsibility, where everyone and all living things can thrive.

Previous page Parramatta: the fastest growing Central Business District in Sydney. Photo: Salty Dingo
Left Redfern: Aboriginal and Torres Strait Islander People performing traditional ceremony. Photo: Katherine Griffiths

Lord Mayor's message

This strategy, developed with input from across Sydney, is such a breakthrough.

Resilient Sydney: a strategy for city resilience is the result of two years' hard work involving all levels of government, business, academia and our communities - an unprecedented level of collaboration across metropolitan Sydney.

The process highlighted our best qualities as Sydneysiders – generosity, inventiveness, a willingness to pull together, and a commitment to improving the lives of all our diverse communities.

It is these very qualities that we will need the most as we face the challenges of the future.

A rapid increase in density has put pressure on schools and early education and on open space, essential services and other infrastructure. Affordable housing is a critical issue and congestion is getting worse.

We're seeing rising inequality, more homelessness, mental illness and obesity. And we're experiencing increasingly extreme weather events with every year classed as another record breaking year in terms of rising temperatures.

All these issues are challenges in themselves and they aren't unique to Sydney - the effects of urbanisation, globalisation and climate change are seen right around the world. They aren't constrained by boundaries or different levels of governance.

It's why this strategy, developed with input from across Sydney, is such a breakthrough.

Resilient Sydney recognises no one organisation can solve our problems and instead looks at how we can work together, across boundaries to protect and champion the needs and interests of our communities.

Every organisation, and every individual, has a role to play. Our City is proud to be one of the 33 councils of metropolitan Sydney working together with action, investment and policies and sharing what we are learning with cities across the world.

Working together can only make us, and our communities, stronger and more resilient, whatever disruptions we may face.

Lord Mayor
Clover Moore

Left Sydney Town Hall. Photo: iStock/Xavier Arnau

Letter from 100 Resilient Cities

On behalf of the entire 100 Resilient Cities team I want to congratulate the Resilient Sydney team and Chief Resilience Officer Beck Dawson on the release of Sydney's Resilience Strategy, a major milestone for the city and our partnership. This document lays out an extraordinary vision of urban resilience that can serve as a model for all of us.

While all resilience strategies are created with an understanding that silos must be breached and sectors and conventional borders planned across, this strategy has conceived of this urban ecosystem at a metropolitan scale, with a commitment by stakeholders to "work beyond our boundaries."

Governance matters in every city, and Sydney is no exception. Three layers of government, 33 metropolitan councils and separate investment strategies and policy making makes change difficult. Sydney's resilience depends on collective leadership.

It is a true testament to the vision and effort of the Resilient Sydney Steering Committee and team that this metro-wide strategy has been forged in lieu of an existing governance structure that could give rise to it. As many cities now realise, they must plan across their metropolitan regions, together. Sydney is truly a leader, setting an important precedent that will be looked at for inspiration in our network and beyond.

At every level of the city: as an individual, a neighbourhood, a business or a government, we invite you to use this work to connect and collaborate.

We are excited to continue this next stage of our partnership in the implementation of this ground-breaking strategy, which will help build a resilient future for Sydney and propel the resilience effort worldwide.

Michael Berkowitz

President 100 Resilient Cities

About 100 Resilient Cities

Resilient Sydney is a member of the 100 Resilient Cities initiative - pioneered by the Rockefeller Foundation.

The 100 Resilient Cities initiative helps cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century. Cities in the network are provided with resources to develop a roadmap to resilience over two years.

Support from 100 Resilient Cities includes financial and practical support to employ a Chief Resilience Officer, expertise and tools to develop a resilience strategy, and access to local and global partners with an interest and experience in resilience.

Sydney joins Melbourne, Wellington and Christchurch in implementing resilience strategies in Oceania.

Letter from the Steering Committee

Our capacity to plan to reduce the impacts of disruption, and to realise opportunities in recovery is a measure of our resilience. The scale of disasters and disruptions affecting major cities elsewhere regularly overwhelms their capacity to respond. The only way to understand and address these challenges at a metropolitan scale in Sydney is by making a clear decision to work beyond our boundaries.

Our metropolis is governed by many organisations. More than 100 business and government entities, agencies and departments have some level of policy or operational control. This makes building resilience a challenge every major organisation must address.

From inception in 2015, we've listened to our communities and representatives from government, business and academia. We've taken an honest look at our city and discussed new ways of solving things together. We will continue to harness this dynamic energy as we manage growth and the challenges it brings.

Resilience is an approach all organisations must adopt to improve the safety and quality of life of everyone in metropolitan Sydney. Our organisations are already making a commitment to do so.

We invite you to join us.

Committee members

100 Resilient Cities
Associate Director Asia Pacific, Sam Kernaghan

Bayside Council
General Manager, Meredith Wallace

Campbelltown City Council
General Manager, Lindy Deitz

City of Sydney Council
CEO, Monica Barone

Deloitte
Managing Partner - Western Sydney, Danny Rezek

Greater Sydney Commission
Environment Commissioner, Rod Simpson

IAG
Group Executive, Jacki Johnson

Independent Ambassador,
Robert Tickner AO

Northern Beaches Council
General Manager, Mark Ferguson

NSW Office of Emergency Management
Executive Director, Feargus O'Connor

Parramatta City Council
General Manager, Greg Dyer

Penrith City Council
General Manager, Alan Stoneham

Resilient Sydney
Chief Resilience Officer, Beck Dawson

Above Circular Quay: Working groups of Resilient Sydney. Photo: Katherine Griffiths
Left President of 100 Resilient Cities, Michael Berkowitz and Resilient Sydney Chief Resilience Officer, Beck Dawson. Photo: Damian Shaw

Executive Summary

Resilient Sydney, is the first resilience strategy for metropolitan Sydney.

This strategy sets the direction we must take to strengthen our ability to survive, adapt and thrive in the face of increasing global uncertainty and local shocks and stresses. This strategy calls for business, government, academia, communities and individuals to lead and work as one city.

This strategy marks a new spirit of collaboration and connection in our city and is the result of two years of effort across Sydney. It responds to the results of engagement with over 1,000 people and over one hundred organisations. The document sets out a five-year strategy on the path to build our resilience. This approach has been developed with all of Sydney's metropolitan councils and contributors from the NSW Government, business and community organisations.

This strategy sets the direction we must take to strengthen our ability to survive, adapt and thrive in the face of increasing global uncertainty and local shocks and stresses.

Sydney is a beautiful, prosperous and multicultural city, but it is struggling to maintain its liveability and equity during a time of rapid growth. As our city grows it is experiencing a range of chronic stresses such as a lack of housing affordability, transport congestion and chronic illness that are impacting people's everyday lives. The city regularly responds to a range of shock events such as extreme heat, storms and flooding or bushfires and cyber attacks. Sydney has the opportunity to use its growth to address vulnerabilities to our economy and environment and create a place of opportunity and wellbeing for everyone.

Sydney will be a thriving and prosperous city of connected and cohesive communities with resilience at its heart. Connections and collaborations will be strong within and between governments, businesses and communities.

Above Parramatta: riverside festival. Photo: Will Perez Ronderos

It is time for Sydney to act as one city. To become connected, inclusive and resilient is a challenge every major organisation in Sydney must address, together.

Our vision for Sydney is a metropolis that is connected, inclusive and resilient. We are one city.

The directions in this strategy reflect the priorities people want for Sydney's future – providing a greater say in decisions that affect them, better collaboration in leadership, stronger community connections and transport connections, more focus on protecting our environment, better emergency preparedness, and acknowledgement and respect for Aboriginal and Torres Strait Islander peoples as one of the world's most resilient cultures.

This strategy supports organisations and communities to participate and collaborate in building connections and developing their resilience plans. You are invited to make your own Sydney resilience commitment and take part in the actions in this plan. We will monitor and report on progress to encourage further action and show change.

It is time for Sydney to act as one city. To become connected, inclusive and resilient is a challenge every organisation and resident in Sydney must address, together.

Resilient Sydney

A strategy for city resilience 2018

Our Vision

Metopolitan Sydney is connected, inclusive and resilient

Our Mission

Sydney will understand and be prepared to manage our resilience challenges

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DIRECTION 1

p 62–71

People centred city

We include communities in decision making for growth and equity.

- Inclusion
- Resilient growth
- A more equitable city

Challenge

Inequitable growth

Outcomes

People are connected to where they live and able to access transport, affordable housing, education and employment opportunities

Actions

Flagship Action

Resilient inclusive growth target
Risk criteria and resilience in local community plans

1. **Shocks and stresses managed through planning for growth**
   Consider economic and social risks through community plans

Supporting Actions

2. **Network metropolitan practitioners for community agency**
   Collective leadership to champion inclusion of the community within strategic decision making across metropolitan Sydney
3. **Collaborate for cross-city active transport**
   Improve health, wellbeing and connections, and provide transport options during times of crisis

Aligned Actions

4. Support people to work closer to home
5. Improve access to health precincts
6. Build community capacity through co-design
7. Advocate for affordable housing for everyone
8. Develop skills for equity

Photo: Sarah Rhodes

DIRECTION 2

p 72–81

Live with our climate

We adapt to sustain our quality of life and our environment.

- Local adaptation
- Global performance
- A diverse economy

Challenge

Pressure on our health, environment and economy

Outcomes

People have access to clean air and water, natural environments and adaptive technology throughout the city for climate comfort and safety, health and city connections.

Actions

Flagship Action

Cool Suburbs - turn down the heat target
2 degrees Celsius reduction in heat in urban areas

9. **Policy and action to cool homes and streets**
   Collaboration to address our biggest shock in the hottest parts of our city

Supporting Actions

10. **Develop investment in resilient buildings, assets, precincts and cities**
    Develop investment in resilient infrastructure, buildings, assets, precincts and cities with tools, decision making frameworks and standards
11. **Enable affordable access to renewable and resilient energy**
    Council led programs to support low income households to use solar

Aligned Actions

12. Adopt urban resilience in research and teaching curricula
13. Measure metropolitan carbon emissions and report on progress
14. Support a more flexible and resilient water cycle
15. Reduce reliance on liquid fuel

Photo: Sarah Rhodes

DIRECTION 3

p 82–91

Connect for strength

Every Sydneysider will feel they belong in our community and city.

- A welcoming city
- Resilient cultures
- Strength in diversity

Challenge

Declining social cohesion

Outcomes

People have equal access to engage in society, the economy and all the city has to offer.

Actions

Flagship Action

City cohesion and wellbeing target
5% improvement in 5 years in community cohesion

16. **Monitor metropolitan social cohesion and wellbeing**
    Measure city-wide and local connections and relationships

Supporting Actions

17. **Learning from First Nations Elders and community leaders**
    Acknowledging the expertise of Aboriginal and Torres Strait Islander communities in Sydney as experts in resilience and survival and supporting their ongoing resilience

Aligned Actions

18. Support communities to know their neighbours
19. Encourage cross-city visitation and understanding
20. Promote safety and tolerance in everyday interactions
21. Promote broad adoption of Welcome to Country protocols
22. Support diversity in leadership

Photo: Sarah Rhodes

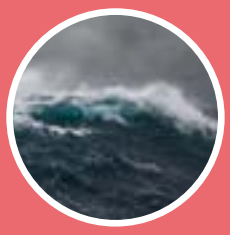
DIRECTION 4

p 92–103

Get ready

We know how to prepare, respond and recover.

- Understanding risks
- Understanding interdependencies
- A prepared community



Challenge

Lack of understanding of risks and interdependencies

Outcomes

Sydneysiders and organisations understand the risks they face and how to work together to respond to them, now and in the future.

Actions

Flagship Action

Preparedness target

100,000 ready Sydneysiders

23. **Get prepared – 100,000 ready Sydneysiders**
    Improve preparedness with the Red Cross, IAG, Australian Business Roundtable for Disaster Resilience and Safer Communities

Supporting Actions

24. **Pilot disaster preparedness program for councils**
    Training, support and processes for councils to improve local preparedness plans and engage their communities
25. **Mapping vulnerabilities at a District planning level**
    Assess the shocks and stresses at District level to identify mitigation projects and inform community preparedness

Aligned Actions

26. Develop a Critical Infrastructure Resilience Strategy
27. Evaluate the community impacts of disasters
28. Support small businesses to manage cybersecurity
29. Help communities to train and volunteer to prepare for disasters
30. Inform risks and ratings with open source data

Photo: iStock/Andrey Pol

DIRECTION 5

p 104–111

One city

We are one city.

- Collective leadership
- Collaboration
- Sharing knowledge

Challenge

Disjointed governance

Outcomes

Key governing organisations across Sydney pledge to build their capacity and cooperate to understand and manage shock and stresses for everyone in a resilient metropolitan Sydney.

Actions

Flagship Action

Collaborative commitment target

100 resilient organisations

31. **Engage 100 organisations in the Sydney Resilience Commitment**
    Support organisations to understand and manage their exposure to shocks and stresses

Supporting Actions

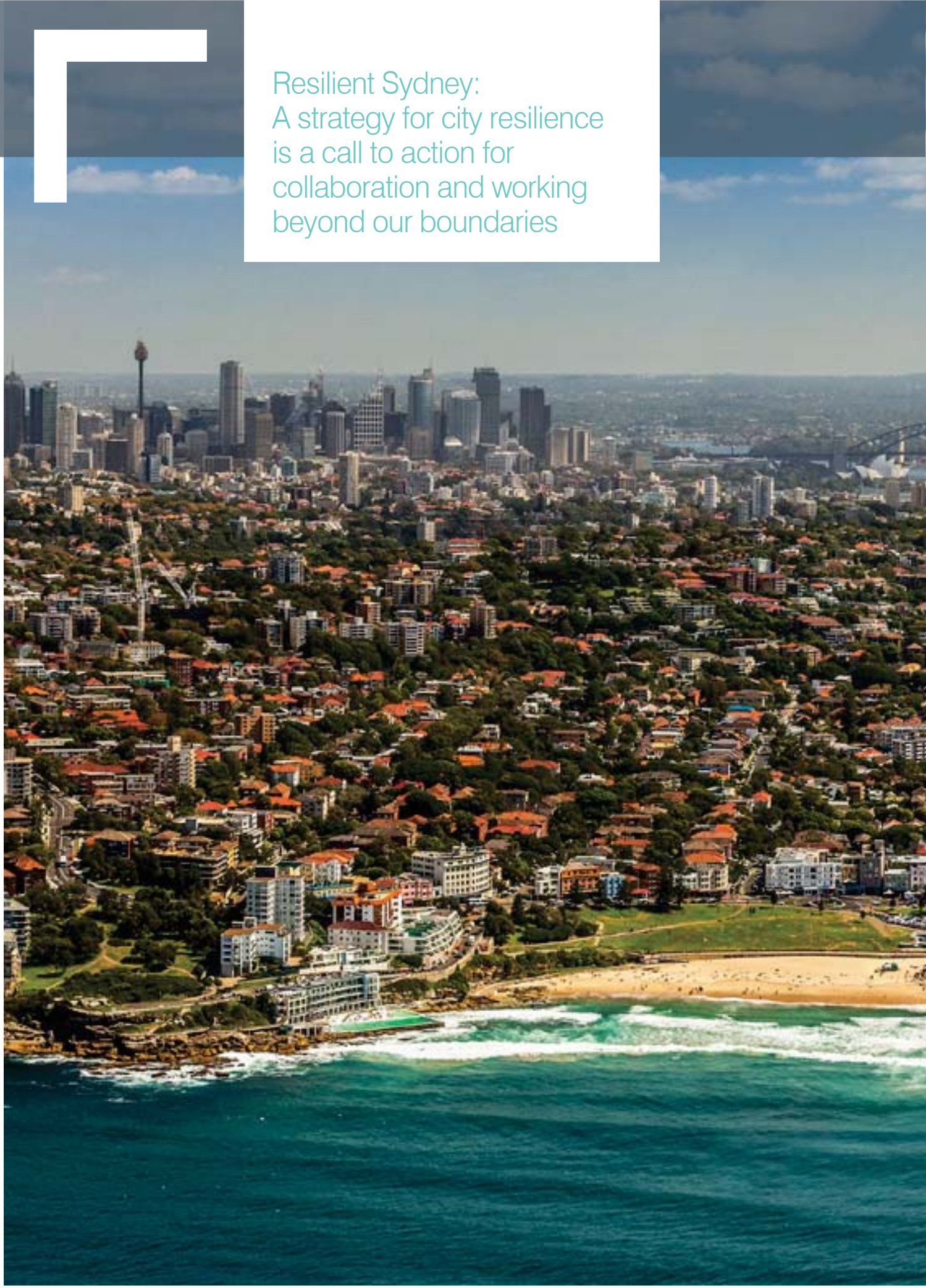
32. **Maintain and support the Resilient Sydney Office**
    Invest in facilitation, collaboration expertise and reporting to support delivery of this strategy

Aligned Actions

33. Measure resilience and wellbeing to monitor and evaluate our goals
34. Harness digital collaboration and networking tools
35. Learn and share with other cities through the 100 Resilient Cities network

Photo: Nathanael Hughes

Resilient Sydney: A strategy for city resilience is a call to action for collaboration and working beyond our boundaries



Our invitation

City resilience commitment

We invite all government, business, academic and community sector organisations in metropolitan Sydney to pledge to build their capacity to understand and manage vulnerabilities, interdependencies and risks for everyone in metropolitan Sydney.

By taking this commitment you will ensure continuity and safety for local communities as well as customers and employees during disruptions. You will demonstrate innovation and leadership, and improve the wellbeing and prosperity of our community. You will reduce potential revenue and continuity impacts to your organisation arising from the key shocks and stresses of Sydney.

Resilient Sydney invites you to lead these changes by taking our 'city resilience commitment'. By adopting these directions your organisation will manage risks and potential impacts arising from the key shocks and stresses of Sydney.

You will also contribute to building Sydney's resilience when your organisation acts to:

- investigate and understand how the shocks and stresses create metropolitan scale community risks and local place-based risks for your organisation
- engage with the people in the city who are most impacted by your decisions
- clarify your role in building Sydney's resilience
- engage in training and capacity building across your organisation
- develop an action plan for your organisation and adopt the directions for resilience
- undertake action and investment.

Resilient Sydneysiders

We invite all residents of Sydney to actively participate in this strategy by taking simple actions to build Sydney's resilience. Everyone can understand and reduce their exposure to the risks arising from the shocks and stresses of Sydney. You will contribute to building Sydney's resilience when you:

- establish a quick and easy network of support with 3 key contacts and neighbours
- review the risks relevant to where you live or work
- use checklists of actions to make an emergency plan
- save the emergency plan as a PDF to be printed and shared with others
- volunteer to support your community, though joining a local group or undertaking first aid training and
- use tools to support these actions such as the Get Prepared app and the NSW Government Get Ready NSW and local council websites.

Left Metropolitan Sydney: from the beaches to the Blue Mountains. Photo: Hamilton Lund
Right Campbelltown: leisure time in the park. Photo: Sarah Rhodes

Our resilience

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22 Why resilience matters

24 Resilience in global cities

RESILIENT SYDNEY | 100 RESILIENT CITIES

What is city resilience?

City resilience is the capacity of individuals, communities, businesses and systems within a city to survive, adapt and thrive no matter what kinds of chronic stresses and acute shocks they experience.

Chronic stresses weaken the fabric of a city on a day-to-day or cyclical basis. Examples include: homelessness and housing affordability, lack of access to public transportation systems, family violence, climate change, structural inequity, and chronic food or water shortages.

Acute shocks are sudden, short-term events that threaten a city. Examples include: major storms, floods, bushfires, heatwaves, disease outbreaks, terrorism and cyber-attacks.

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Why resilience matters

Disasters and disruptions can be expensive and impactful – whether they are caused by short term shocks or chronic stresses in cities. People can lose their lives. Livelihoods and mental health can be affected. Governments, businesses and the community are required to fund losses and recovery costs when infrastructure fails, markets change or the environment is damaged.

Taking action to proactively manage city challenges and interdependencies offers access to multiple benefits, or a 'resilience dividend'. When disruptions are expected, planned for and turned into opportunities, they offer financial, social and environmental benefits. These opportunities can be understood through the City Resilience Framework and achieved through:

- preventing or mitigating stresses and shocks
- adapting to unexpected shocks and stresses
- rapidly returning to normal and revitalising after disruptions
- accessing benefits when there are no disruptions
- productive, peaceful prosperity and improved equity in times of stability.

Previous page Sydney: Traffic congestion on arterial roads. Photo: iStock/Beyond Images
Left Penrith: Napean River. Photo: Sarah Rhodes
Right Pyrmont: Sydney fish markets. Photo: Adam Hollingworth

When disruptions are expected, planned for and turned into opportunities, they offer financial, social and environmental benefits.

Resilience in global cities

As a member of the 100 Resilient Cities Network, Sydney is exchanging ideas with cities worldwide about the most effective ways to build resilience. The cities listed have a resilience strategy and are taking actions relevant to the challenges we face in Sydney.

1

Mexico City, Mexico

Mobility hierarchy for transport and urban planning decision making

Mexico has made significant investment in mobility and acknowledgement of mobility as a fundamental right. Bus rapid transit and policy favouring pedestrians and bikes has created a more robust and equitable transportation system.

2

Norfolk, Virginia, USA

Long Horizon Planning

Norfolk undertook long horizon land use planning efforts that considered both at-risk and secure areas of the city in a holistic planning effort and included increasing density in protected or high ground areas as a resilience strategy.

3

Medellin, Columbia

Resilience Think Tank

The Medellin Office of Resilience created a separate Think Tank for engaging a wider audience in evaluating and innovating on resilience initiatives and quantitatively assessing effectiveness of programs and projects government and the private sector implement.

4

New York City, New York, USA

Heat wave programs

New York created an initiative to mitigate urban heat island across the city and petitioned successfully for the expansion of a federal program for low income residents to be applicable for air conditioning purchase, installation, and energy costs.

Digital accessibility

New York is supporting access to affordable broadband for business and offering free Wi-Fi through the LinkNYC program in the city's public spaces.

5

San Juan, Puerto Rico

Renewable Energy

San Juan aims to create redundancies in the energy supply and reduced dependence on imported liquid fuel through development of solar farms and residential incentive programs for smaller scale installations.

6

Los Angeles, California, USA

Housing affordability

City initiatives will double the pace of affordable housing production and preservation, and triple production of new permanent supportive housing by changing regulations, adopting new financing mechanisms, and exploring adaptive re-use of publicly-owned sites.

7

Thessaloniki, Greece

Community engagement

Youth empowerment was achieved through outreach and the convening of a Youth Council for city government to foster the country's next generation of leaders.

8

Boston, Massachusetts, USA

Inequity

Resilience planned through the lens of racial equity and social justice, including access to employment and community education.

9

Rotterdam, Netherlands

Threat of Cyber attack

Rotterdam created a Cyber Resilience Platform for education and knowledge sharing to promote investment in cyber security.

Funding and adopting climate adaption initiatives

Rotterdam promoted small scale, citizen-led climate adaptation projects to support community learning, placemaking, and to increase the reach of the planning process.

10

Bangkok, Thailand

Economic Empowerment

Bangkok is supporting small scale urban agriculture for food production value and economic empowerment of urban communities as well as maintaining land for open space and water storage in extreme rain events.

11

Melbourne

Urban Heat Island, need for cooling spaces for the community

The Urban Forest program seeks to enable strong natural assets and ecosystems as well as to create environments for social cohesion and cooling

Metro Cycle Plan

The metropolitan cycling network initiative proposes connection of key hubs in the city to increase bicycle participation and set an example for local councils to invest in bike infrastructure as well.

12
Singapore
Heat Advisory
Singapore created a comprehensive heat index and public advisory system to keep people safe and healthy in a heat wave.

13
Wellington, New Zealand
Citizen Disaster Preparedness and Education
A series of online maps and blue lines physically drawn on roads in Wellington indicate evacuation and safe zones for tsunamis after earthquakes. This strategy provides both digital and analogue information for citizens and to integrate emergency preparedness into everyday life.

14
Christchurch, New Zealand
Engagement of Indigenous Peoples
The Treaty Partnership began in 1940 as a pact between the Maori people and the Crown. Today, it fosters a truly collaborative, bi-cultural model of governance regarding resilience and day to day governance.

15
Durban, South Africa
Adaptation in Resource Scarce Environment
Durban is tackling its climate adaptation efforts with limited resources, adapting existing systems and integrating information and decision-making centres to do more with less. Partnership with higher education institutions to supplement government research capacity has been particular effective.

Developing this Strategy

Sydney used the 100 Resilient Cities process to develop this Resilient Sydney strategy.

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32	Asking Sydney about resilience
34	Shocks and stresses
36	History of shock
38	Sydney resilience challenges

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Decision making for urban resilience in Sydney

The complexity and connectedness of modern, dynamic cities and city systems makes applying resilience thinking to urban governance a challenge.

Resilient Sydney consulted with 100 Resilient Cities as well as Australian and global academics researching resilience in: ecosystems and climate, emergency management and counter terrorism, infrastructure planning and property management, insurance and finance, communities and personal resilience, and economies and the governance of cities.

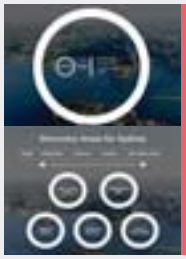
This has shaped our understanding of resilience theory, informed our consultation process and is reflected in our resilience framework for Sydney. Technical processes used include: the City Resilience Framework, the key shocks and stresses of Sydney, the resilience lens and resilience behaviours. Community and stakeholder research processes used include: resident surveys, semi structured interviews, in depth workshops exploring disaster scenarios, collaborative design of opportunities for potential projects and deliberative democracy for decision making.

The methodology we used is detailed in the Diagnostic Report (2017), and the Engagement Report (2017), and is summarised below. The summary shows how resilience theory has influenced the strategy development process and outputs.

Previous page Green Square: Construction site. Photo: Katherine Griffiths

PHASE I

Agenda Setting Workshop



City Context & Preliminary Resilience Assessment

Phase II Scope of Works & Engagement Plan

PHASE I

Inputs:

- 150 person stakeholder workshop
- 381 community surveys
- 121 stakeholder surveys
- 100 stakeholder interviews

Preliminary Resilience Assessment

Key activities:

- Initial stakeholder and community engagement
- Assess current city resilience
- Identity and prioritise discovery areas
- Establish engagement strategy

PHASE II

Diagnostic Report

Engagement Report

Resilient Sydney Strategy

IMPLEMENTATION and ACTION

PHASE II

Inputs:

- 91 technical experts and influencers in working groups
- 74 stakeholders at workshops
- 223 community members, randomly selected across metropolitan Sydney

Community resilience priorities

Key activities:

- Development and testing of Discovery Areas
- Stakeholder and Community research and prioritisation of the resilience challenges and opportunities for Sydney.

PHASE III

Implementation

Key activities:

- Pilot projects
- Policy advocacy
- Practical collaborative processes
- Network and share resources - Evaluate process

Resilience theory

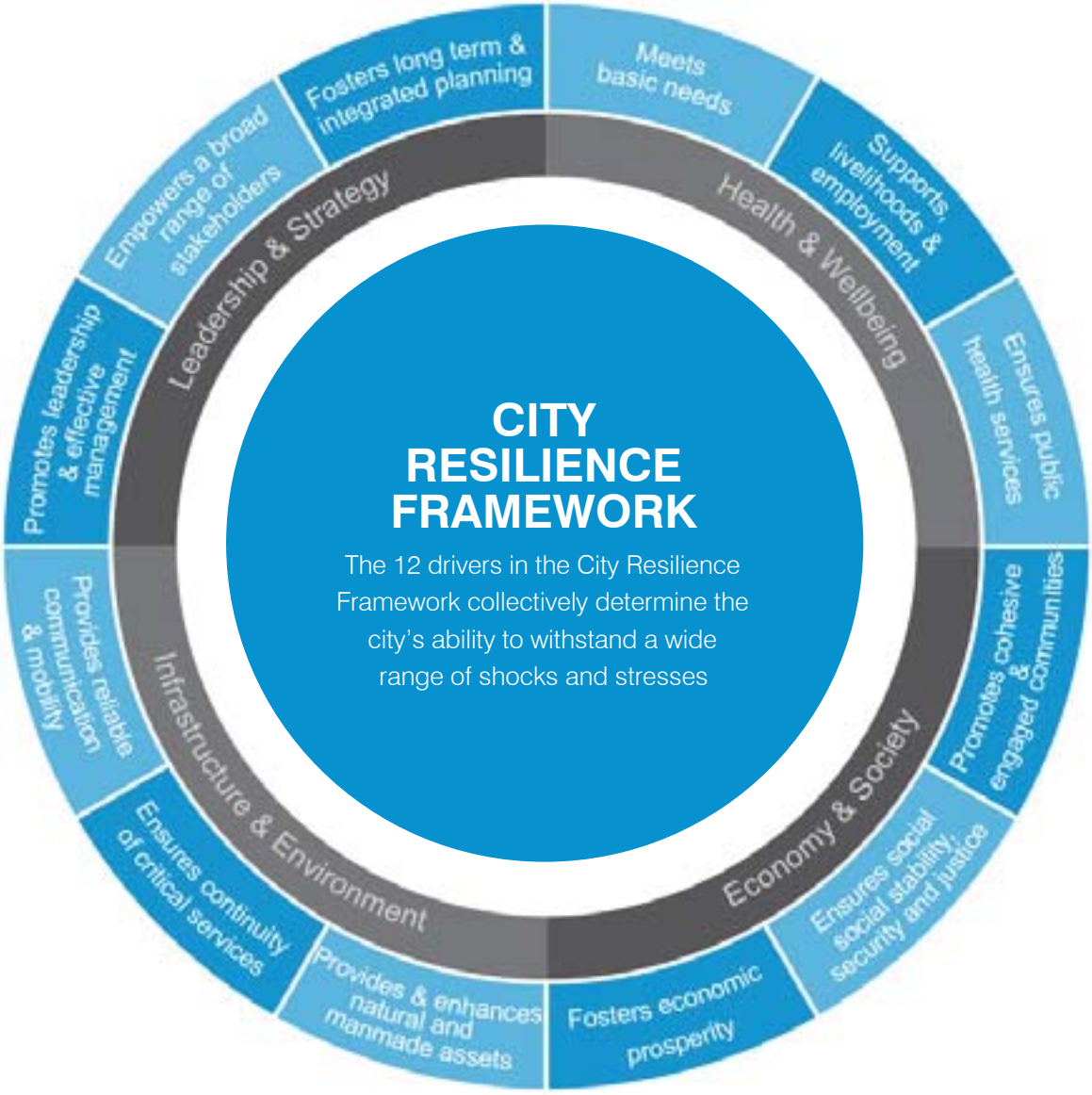
The City Resilience Framework

100 Resilient Cities uses the City Resilience Framework, developed by Arup and the Rockefeller Foundation, to assess the strengths and weaknesses of cities within four 'dimensions' and 12 'drivers'.

We have adopted this framework for metropolitan Sydney.

The four dimensions are:

- **health and wellbeing**: the essential city services that safeguard human health and diverse and secure livelihoods
- **economy and society**: the social and financial systems that enable urban populations to live peacefully, and act collectively
- **infrastructure and environment**: the way in which built and natural assets provide critical services and protect residents
- **leadership and strategy**: effective leadership and management, empowered stakeholders and integrated planning.



Resilience Behaviours

Above Fairfield: Playground. Photo: Mark Bransdon

The resilience lens – 7 guiding principles

The resilience lens provides guiding principles at each phase to direct effective research, consultation, planning and action.

The lens helped us to:

- Approach the challenge in an integrated and holistic way that crosses silos, using the City Resilience Framework
- Consider impacts of multiple shocks and stresses identified through a broad risk and hazard assessment
- Aim for short, medium and long-term benefits
- Consider resilience behaviours and qualities when proposing solutions
- Strive for equitable outcomes
- Leverage actions across a broad group of stakeholders
- Consider cross-jurisdictional implications at intercity, regional, national, global levels.

People, organisations, businesses, communities and cities that survive disasters all show resilient behaviours and decision making. Sydney can learn from these experiences. We have adapted the five key resilience behaviours identified in the work of 100 Resilient Cities and Professor Judith Rodin in The Resilience Dividend (2014). This approach has informed how we consider decision making in Sydney, in particular.

We asked all consultation participants to consider the below questions for resilience.

Integrated
Are we engaging widely to support decision making and connecting people, communities and organisations?

Aware
Do we understand how critical city systems work and how they rely on each other?

Adaptive
Are we flexible to respond to rapid changes and disruptions to maintain health and liveability?

Diverse
Do we value the role of different people, places and technologies in a cohesive and just city economy and society?

Self-regulation
Are we creating stable and flexible governance structures?

Asking Sydney about resilience

Since 2015, Resilient Sydney worked with more than 1,000 representatives from all levels of government, business, academia, community services, First Nations Peoples and our local communities. This group developed around 300 solutions, 70 per cent of which successfully addressed more than one aspect of the City Resilience Framework.

We used the core values and research principles set by the International Association for Public Participation (IAP2), in a comprehensive engagement process to build our understanding of Sydney's challenges, connections and capacity to integrate resilience into decision making. We recruited a robust, diverse sample of participants, provided consistent information and asked a uniform set of questions to enable participants to identify problems and develop solutions.

The outcome was a set of responses across a spectrum of political views, expertise, background, geography, experience and understanding of our metropolitan city.

Of all these responses, the community provided the clearest insight into the city as a system. The daily difficulties experienced by residents in many parts of Sydney highlighted the connections between housing, transport, jobs, education, health services and vulnerability to shock events such as extreme heat.

Who we consulted

- **Elders** - Aboriginal and Torres Strait Islander Elders from across metropolitan Sydney
- **Community** – groups of residents from the metropolitan planning districts of Sydney, with each group reflecting the demographic, socioeconomic and cultural profile of its district
- **Government and business representatives** – representatives from business, community sectors, local and state governments
- **Working groups** – experts from all sectors, including academia, and city leaders with influence and decision making authority.

Above Resilient Sydney workshop. Photo: Katherine Griffiths
Bottom left and right Parramatta and Chatswood: Participants at Resilient Sydney workshops. Photo: Damian Shaw

Shocks and stresses

Urbanisation, globalisation and climate change mean Sydney's key systems such as health services, transport, utilities, telecommunications and social services are increasingly interdependent with other parts of the country, region and globe and therefore potentially more vulnerable to disruption.

Disruption may be due to a sudden, abrupt shock event that stops everything in our city, or a slow burning stress that makes life more difficult day to day. Chronic stresses can increase the likelihood of shock events, amplify the impacts, and increase recovery time and cost.

Resilience provides a view of how underlying vulnerabilities and stresses cause much bigger impacts during shock events. City systems are interdependent and work together. Cascading failures can occur when these interdependencies are not understood or managed.

Identifying the key shocks and stresses, as well as taking a systems view of how Sydney supports residents, communities, government and businesses helps us best manage community needs, risks and vulnerabilities.

We used the 100 Resilient Cities tools to identify the most impactful shocks and stresses facing metropolitan Sydney. The 2016 Preliminary Resilience Assessment and City Context Report detail these shocks, stresses, vulnerable assets and megatrends[2].

[2] Preliminary Resilience Assessment (2016), and City Context Report (2016). Resilient Sydney.

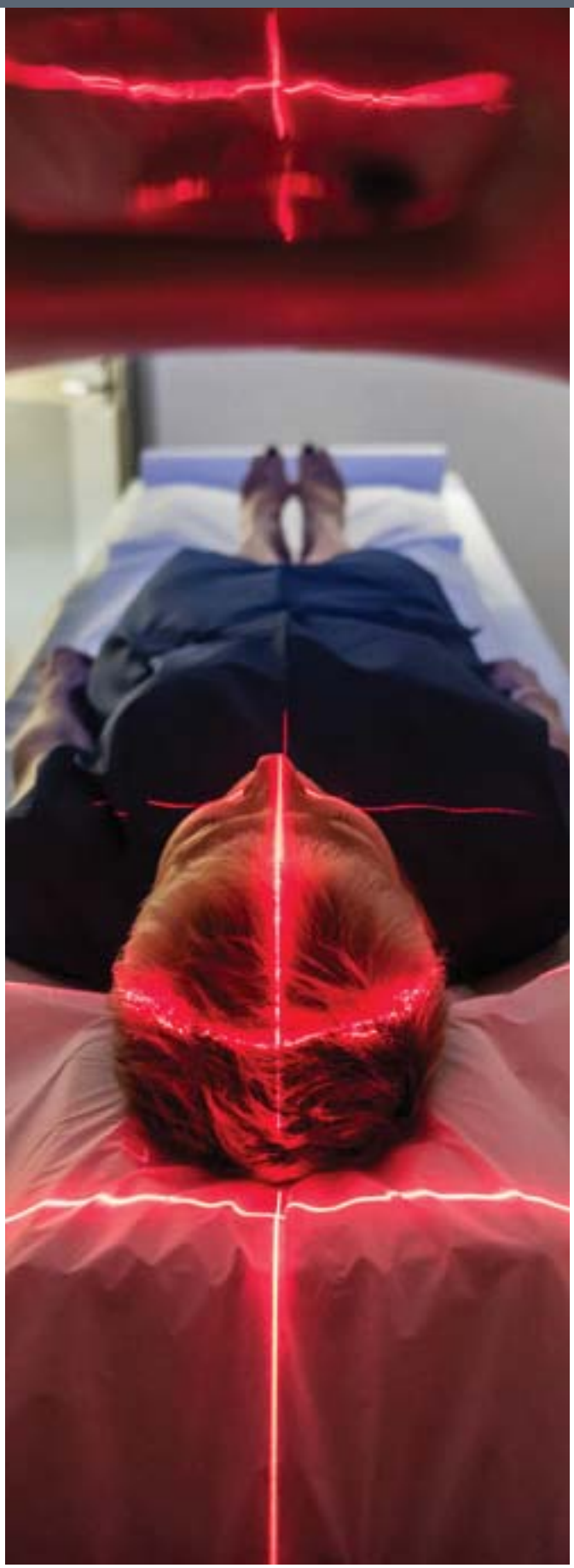
Shocks

Sydney is highly vulnerable to extreme weather events, particularly heatwaves and storms and their impacts including bushfires and flooding. When energy demand increases during a heat wave, electrical infrastructure is more likely to overload and fail, causing air conditioners to stop working and outages to communication networks, reducing the ability of people to seek help. This shows how easily extreme weather events can trigger other shocks, such as power and communications outages, water network or infrastructure failures.

A financial crisis could degrade the ability of Sydney's economy to function due to our large finance, media and telecommunications sectors, and the high levels of household debt across Sydney. Sydney has demonstrated resilience to global financial crises such as the 2007 global financial crisis, but there is the potential for another event to occur.

Sydney's Major Acute Shocks

- **Extreme Weather**
- **Infrastructure Failure**
- **Financial Institution Failure**
- **Water Crisis**
- **Digital Network Failure**
- **Terror Attack**
- **Disease Pandemic**
- **Cyber Attack**



Stresses

Many of Sydney's most impactful stresses are associated with planning and investment to support the rapid growth and social changes of our population. The city is experiencing a loss of housing affordability and high rates of household debt. There is a lack of transport diversity and employment diversity, particularly in Western Sydney. These contribute to increasing geographic and social inequity and the financial vulnerability of communities to shock events. Communities are concerned about the decreasing social cohesion in our diverse population.

Chronic stresses can amplify the impacts of shock events. Rising temperatures make it difficult to exercise outdoors, exacerbating our already high rates of chronic illness and increasing pressure on our health services. These issues combine to affect how our health services are able to perform during a disaster.

Sydney has begun to collaborate for cooperative planning between land use and transport services to address some stresses, yet a more holistic systems approach to understanding interdependencies is required to reduce the impact of stresses on people's lives.

Sydney's Chronic Stesses

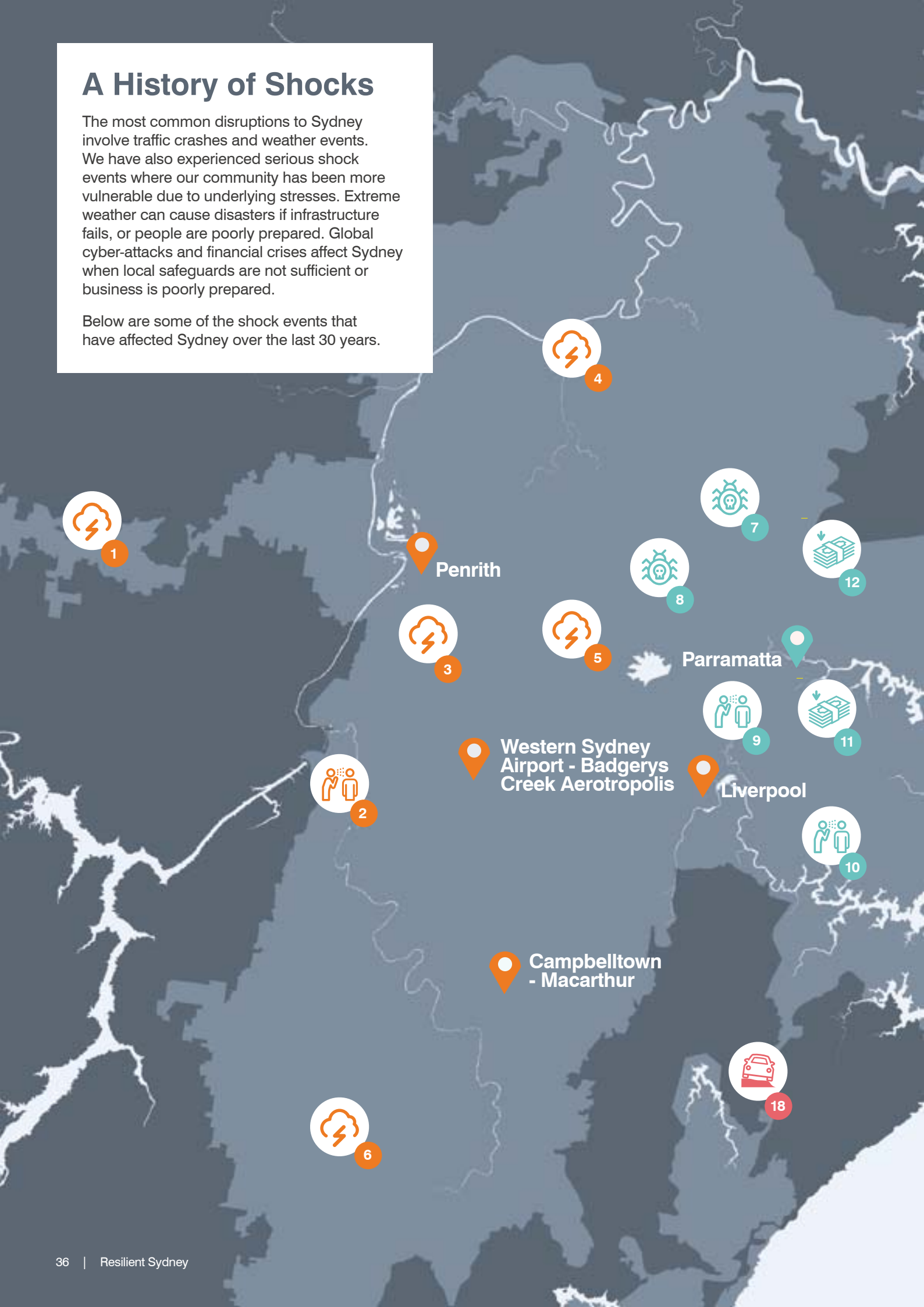
- **Health Services Demand**
- **Housing Affordability**
- **Social Cohesion**
- **Employment Diversity**
- **Inequity**
- **Chronic Illness**
- **Transport Diversity**
- **Drug and Alcohol Abuse**

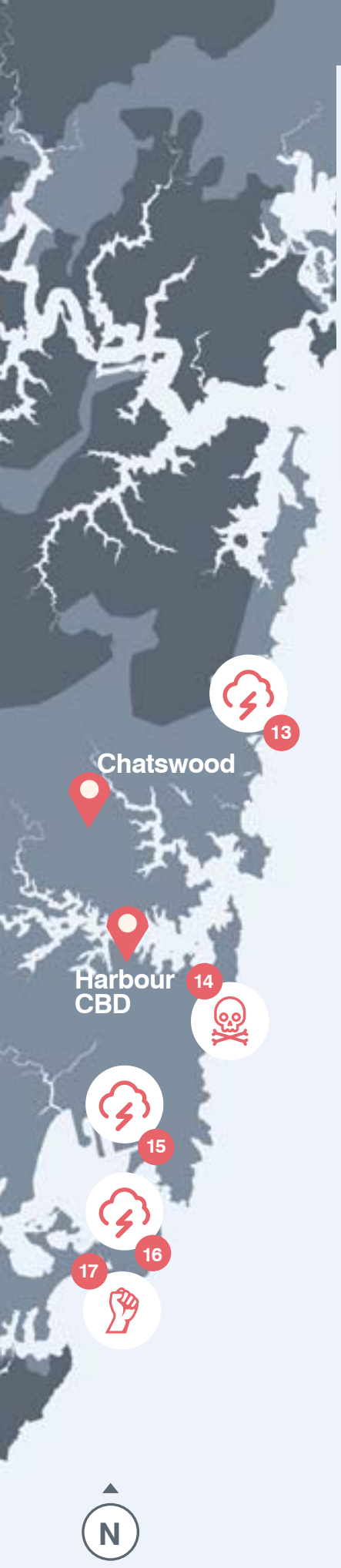
Left Bushfire is a common Sydney shock event. Photo: iStock/Skipro101
Right Health services are in high demand. Photo: Johnny Greig

A History of Shocks

The most common disruptions to Sydney involve traffic crashes and weather events. We have also experienced serious shock events where our community has been more vulnerable due to underlying stresses. Extreme weather can cause disasters if infrastructure fails, or people are poorly prepared. Global cyber-attacks and financial crises affect Sydney when local safeguards are not sufficient or business is poorly prepared.

Below are some of the shock events that have affected Sydney over the last 30 years.





Western City

1 Extreme weather – fire | Blue Mountains 2013

Bushfires caused the destruction of 196 homes, and significant damage to 132, totalling $180 million in losses.

2 Disease pandemic | Warragamba Dam 1998

3 million residents were alerted to “boil water” due to a giardia outbreak.

3 Extreme weather – heat | Penrith 2013

In January 2013, during extreme heat of 46°C, 263 people required medical treatment, with 133 people falling unconscious. The extreme heat caused power outages and train delays on almost every Sydney Trains railway line.

4 Extreme weather – flood | Windsor 1990

The most recent greater than a 1 in 20 chance per year flood occurred in 1990, with flood waters reaching above 23.4m in Penrith and 13.5m in Windsor. More than 42,000 people would need evacuation if a 1 in 200 chance per year flood event occurred today.

5 Extreme weather – heat | Western Sydney 2017

The 2016-2017 summer was Sydney’s hottest on record with temperatures reaching 47 degrees. More than 1,100 people presented to Westmead Hospital’s emergency department with possible heat-related conditions in December and January.

6 Extreme weather – flood | Picton 2016

Flooding in Picton in 2016 was caused by 400mm of rainfall following the East Coast Low storm on June 5th, causing damage to 65% of businesses.

Central City

7 Cyber attack | Metropolitan-wide 2016

The 5 yearly Australian Bureau of Statistics census was interrupted by a cyber-attack which blocked Sydneysiders and Australians nationwide from completing the census for 40 hours.

8 Cyber attack | Metropolitan-wide 2015

The Australian Bureau of Meteorology was hacked, with a foreign agent installing malicious software to steal sensitive documents and compromise Federal Government networks.

9 Disease pandemic | Westmead 2017

Heavy demand associated with the flu season in August 2017 filled major hospitals to capacity and created significant delays in treatment.

10 Disease pandemic | Metropolitan-wide 2009

The Federal Government spent $120 million on 21 million influenza vaccine doses. There were 2 deaths from swine flu recorded in Sydney.

11 Financial institution failure | Parramatta CBD 2007

The global financial crisis (GFC) caused cost increases and delays to the development of Parramatta Square.

12 Financial institution failure | Metropolitan-wide 2001

Collapse of the insurer HIH caused $5.3bn losses due to debts, potential insurance claims and fraud. NSW was exposed to $600 million dollars of losses in builders’ warranties and motor vehicle insurance.

Eastern City

13 Extreme weather – storm | Collaroy 2016

An East Coast Low 100 year storm combined with a king tide caused severe damage and coastal erosion of 50 metres causing damage to 10 homes in the Northern Beaches, leaving 30,000 homes without power across Sydney and causing $304 million in damages across NSW.

14 Terror attack | Sydney CBD 2014

This lone gunman siege event caused 3 deaths including the attacker, closure of the financial district, 66 claims for losses and was declared a terrorism event.

15 Extreme weather – hail storm | Botany CBD 1999

The Insurance Council of Australia estimated this hailstorm caused $387.5 million damage to retail and industrial buildings, and an additional $25 million in the cost of business interruption to those industries.

16 Extreme weather – storm | Kurnell 2015

At least 25 homes were destroyed or severely damaged and the Sydney desalination plant significantly damaged when a tornado producing winds of 217 kilometres per hour tore through the Kurnell area.

17 Social unrest | Cronulla 2005

5,000 people were involved in the riots which resulted in arrests for malicious damage, assault, affray, arson, property damage and driving offences.

18 Infrastructure failure | Waterfall 2003

In 2003 a train departed Waterfall station and derailed causing 7 deaths and 40 injuries.

Please see references on page 127

Sydney's resilience challenges and opportunities

The consultation process highlighted the following key priorities for metropolitan Sydney and provided the framework and direction for the Resilient Sydney strategy:

Community agency

From a community perspective, consultation on city changes are led by many separate government and private sector organisations operating at different scales and lacking coordination. There is an appetite for communities to act in collaboration and partnership with governments and businesses. Communities are willing to create solutions based on their needs and local knowledge of places and district communities. Solutions include encouraging best practice in inclusive engagement to ensure decision-making puts people first and the most impacted are the most included in decisions.

Adaptation to climate

There was strong and widespread concern about inaction in reducing carbon emissions and adapting to our changing climate. Solutions include: decentralised renewable energy for carbon emission reduction and energy security, changes to building codes and regulations, and city greening to promote healthy lifestyles and enhance comfort during extreme heat.

Social cohesion

Improving social cohesion, including increasing tolerance for cultural diversity, is fundamental to Sydney's ability to survive and thrive. Solutions include prioritising learning from First Nations Peoples, investing in community events, increasing awareness of and strengthening our responses to racism, and ensuring decision-making and leadership better reflects our diverse cultures.

Community preparedness

There is no broad understanding of our community preparedness for shocks across Sydney. Solutions include: improving connections between organisations that manage city systems, providing multiple methods of delivering essential services to communities, data sharing, and communication and collaboration to plan for disruption in organisations and communities.

Governance collaboration

Fragmented governance and distrust is one of Sydney's biggest challenges and collaboration is a priority. Community concerns related to how separate decisions are made that determine housing, infrastructure and services, transportation, education and employment. These issues are connected in people's lives. Suggested changes include connecting the many private and public sector organisations responsible for city plans to create new and improved collaborative decision making.

Collectively these outputs from the consultation and technical assessments of the city resulted in a set of five clear resilience challenges for Sydney to tackle:

- inequitable growth
- pressure on our health, environment and economy
- declining social cohesion
- lack of understanding of risks
- disjointed governance.

Our responses to these five challenges are outlined in the Strategy as five directions and 35 actions.

Above Redfern: Resilience workshop. Photo: Damian Shaw
Right Green Square: Community garden. Photo: Katherine Griffiths

[2] Preliminary Resilience Assessment (2016), and City Context Report (2016). Resilient Sydney.

There is an appetite for communities to act in collaboration and partnership with governments and businesses.

Our City and People

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Metropolitan Sydney today

Sydney is one of the most diverse cities in the world. The metropolis is home to the largest population of Aboriginal and Torres Strait Islander peoples in Australia. Around 5 million people from more than 200 different cultures also live here. Sydney is known for the beauty of its natural environment, outdoor lifestyle and liveability.

Sydney is a key driver of the Australian economy contributing almost 40% of GDP. It is home to strong financial, tertiary education, media and telecommunications sectors and a growing digital industry. The central business districts of Sydney and Parramatta are to the east of the geographic centre. They are the knowledge and financial hubs of our city.

Our city already covers over 12,000 square kilometres and is growing, particularly in the west and southwest, where a large portion of Sydney's young people live. The suburbs of the north and east are home to an older, ageing demographic.

Sydney sits in a broad sandstone bowl at the foot of the Blue Mountains. Ancient rivers and waterways have carved the hills, alluvial plains and deep harbour, eventually depositing golden sands on Sydney's beaches. Our city's waterways and topography constrain the development of infrastructure and spatially divide communities. There is a distinct economic, health and opportunity divide between communities in the southwest and northeast of Sydney.

Regional NSW and the semi-rural fringe of Sydney supply most of our city's food. Water, energy and much of our workforce also come from Sydney's growing edges.

Sydney's climate is changing. Our natural and urban environments are increasingly affected by warming temperatures, heatwaves, intense storms and bushfires.

Please see references on page 127

A snapshot of metropolitan Sydney – Australia's global city

Population of
5,005,358[1]
growing to 8 million by 2056[3]

with
39.2%
born in another country
(ABS, 2016)

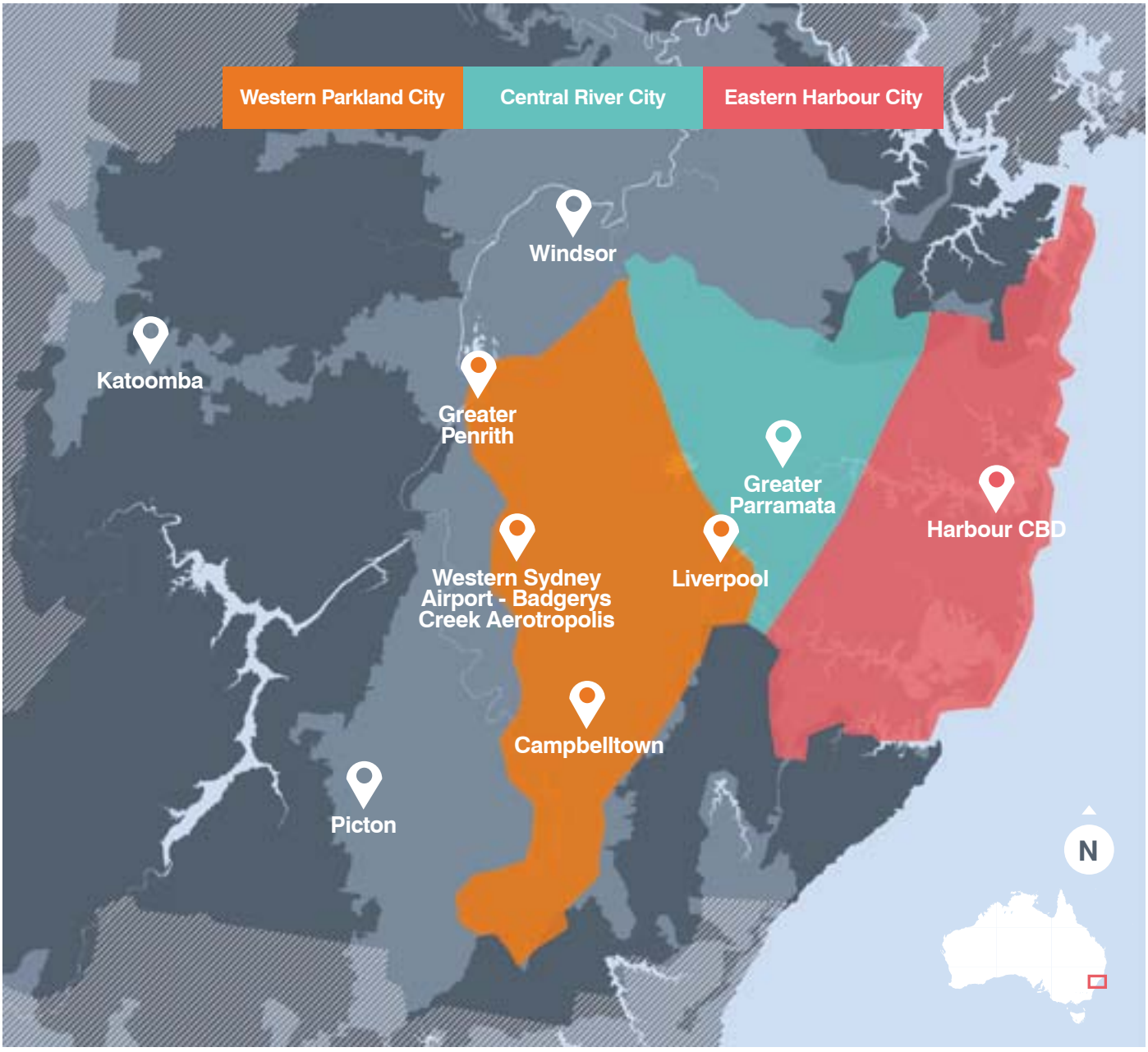
Contributed
38.6%
of Australia's GDP growth in 2015–16

Unemployment rate
4.9%
is below the Australian average[4]

Poverty rate
15.2%
the highest of Australia's major cities[6]

Previous page: Newtown: Wear It Purple day.
Photo: Katherine Griffiths

Map of Sydney



Greater Sydney as a metropolis of three cities, as described in the Greater Sydney Region Plan (2018), Greater Sydney Commission.

Protected Natural Area

Metropolitan Rural Area

Non-Greater Sydney Area

Governance and global commitments

Local governance and policy context

Global issues need global solutions and integration. 100 Resilient Cities is part of a worldwide trend in programs that engage decision makers who represent big populations in nations and in cities. Through the United Nations (UN), the Australian Government has made commitments to global initiatives for collaborative action.

Cities are at the forefront of global collaboration for global issues and making use of global networks such as 100 Resilient Cities to learn from each other and make change. Cities are adopting or aligning to the UN Sustainable Development Goals and managing disaster risk reduction through local emergency and disaster preparedness. Coalitions such as the C40 alliance and Carbon Neutral Cities Alliance are sharing best practice and experience on climate change and adaptation.

In New South Wales and Sydney, the links between the global, national, and local or city-scale approaches usually take place through state government policies, budgets and investments and local government strategies and plans.

Government in Sydney

There are three layers of government in Sydney: the Australian Commonwealth Government, New South Wales State Government, and many local governments. This multi layered and complex governance system requires collaboration for effective strategic planning and implementation at metropolitan scale.

Within these layers the Australian Commonwealth Government is responsible for: defence and foreign affairs; trade, commerce and currency; immigration; postal services; telecommunications and broadcasting; air travel and most social services and pensions. The Australian Commonwealth Government also provides funding to the NSW State Government for health, welfare, education, and infrastructure.

From a resilience policy position the Australian Commonwealth Government has developed a National Strategy for Disaster Resilience (2011) which sets seven priority areas to build disaster resilience communities and a Critical Infrastructure Resilience Strategy (2015) which aims to ensure the continued operation of infrastructure in the face of all hazards.

Above Sydney: President of 100 Resilient Cities, Michael Berkowitz. Photo: Katherine Griffiths
Right Parramatta River: ferry cat.

Policy in Sydney

At a NSW State Government level, major responsibilities include: schools and hospitals; conservation and environment; roads, railways and public transport; public works; agriculture and fishing; industrial relations; community services; sport and recreation; consumer affairs and police, prisons and emergency services. Fire and Rescue NSW, NSW Rural Fire Service, and NSW State Emergency Service are funded through the Australian Commonwealth Government Emergency Services Levy on household insurance policies (73.7%), Local Government (11.7%), with the NSW Government contributing (14.6%).

NSW has a framework of plans, guidelines and committees for emergency Planning, Preparation, Response, and Recovery (PPRR) activities at state, district, and local levels. They prescribe the role, responsibilities and arrangements for each agency involved in emergency management. Metropolitan Sydney is divided into three Emergency Management Regions, designated as Sydney Metro, North West Metro, and Southwest Metro. Across these three regions there are a number of emergency management sub plans which support the NSW State Emergency Management Plan (2012). Support for community resilience post-disaster includes the NSW Department of Emergency Community Resilience Innovation Plan (2016).

The NSW State Government defines the jurisdictions and geographical boundaries of each local government area. Key responsibilities assigned to the 33 local government areas across metropolitan Sydney include: building development and regulations; public health; local roads and footpaths; public recreation facilities such as aquatic centres, playgrounds and youth centres, libraries, parks and playing fields; local environmental issues, waste disposal, childcare facilities and many other community services.

In managing these services, Community Strategic Plans are developed which represent the highest level of strategic planning undertaken by each local council. It is in these Community Strategic Plans that local councils across metropolitan Sydney including the City of Sydney, Parramatta, Penrith and Campbelltown are starting to adopt a resilience approach for their communities. The Greater Sydney Commission, the agency responsible for planning for Greater Sydney, identified resilience as a key direction in the Greater Sydney Region Plan (2018). The 2018 NSW State infrastructure Stategy includes six recommendations regarding resilience. This will assist with putting into operation resilience within land use planning and operational programs across local government.

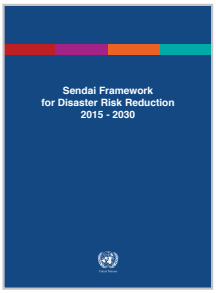
Future monitoring and evaluation of resilience in Sydney will report on how community, government, academia and businesses are building their capacity for resilience.

Resilience at every level

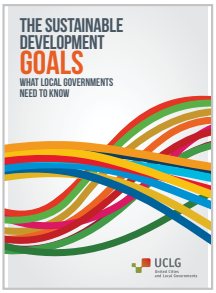
Frameworks and policies that support city resilience are being developed at every level of governance applicable to Sydney.

A selection of relevant documents are shown. Resilience planning is already emerging in these conventions, strategies, policies and now into local community plans. As more organisations understand their role in community resilience, plans and policies will mature to reflect new knowledge.

Global



UN Sendai Framework for Disaster Risk Reduction (2015)

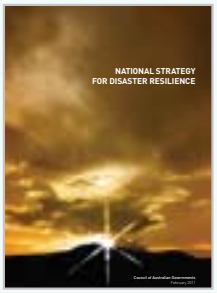


UN Sustainable Development Goals (SDGs)

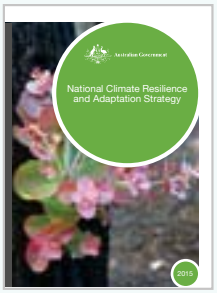
World Economic Forum: Global Risks Report (2018)

UN Framework Convention on Climate Change: Paris (2015)

National



National Strategy for Disaster Resilience (COAG, 2011)



National Climate Resilience & Adaptation Strategy (2015)

Australian Infrastructure Plan (IA, 2016)

Critical Infrastructure Resilience Strategy (2015)

NSW State

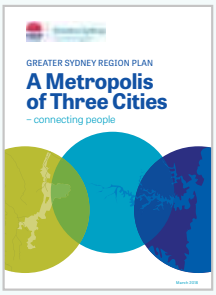
NSW State Emergency Management Plan "EMPLAN" (2012)

NSW Climate Change Policy Framework (2016)

NSW State Infrastructure Strategy (2018)

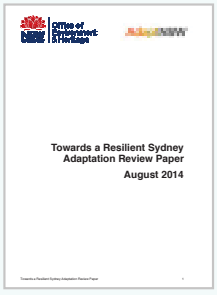
COMPACT Program Multicultural NSW

Metropolitan

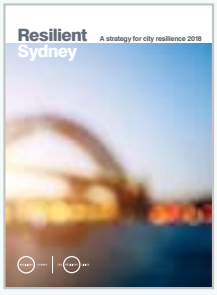


Greater Sydney Region Plan (2018)

Future Transport Strategy 2056 (2018)

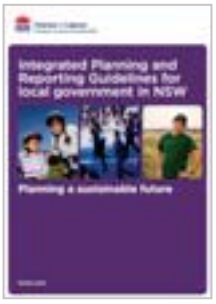


Towards a Resilient Sydney, Adapt NSW (2014)



Resilient Sydney Strategy (2018)

Local



IP&R document for Councils

All local councils involved in Sydney are looking to incorporate resilience in their local Community Strategic Plans and Operational Plans. A number have already done so.

Learning from Elders: resilience and resistance

"Aboriginal people have always lived in Sydney. After the arrival of the First Fleet in 1788, the British encountered Aboriginal people around the coves and bays of Port Jackson. The Aboriginal communities here showed enormous resilience and generosity towards the British who took their land."

Barani Barrabagu[1]

Australia's First Nations Peoples are the world's oldest continuous living culture and the traditional custodians of Sydney.

Aboriginal and Torres Strait Islander community Elders and leaders shared their knowledge on the qualities that enabled their communities to thrive for tens of thousands of years.

Elders identified the following qualities as critical for resilience:

Connection A sense of belonging and connection to family, community and culture, with Elders as givers and receivers of culture, respect and care

Sharing A willingness to help anyone who needs it, even if you don't have much yourself

Participating A strong work ethic – just getting on with it

Identity Visibility of culture and support for young people – from the Indigenous and wider community.

The Elders identified a single key shock, the European colonisation of the Sydney Basin, as the single most impactful event on their ancestors, their lives and the region. They agreed that physical and cultural survival in the face of colonisation is a binding theme for First Nations individuals and groups in Sydney.

The skills, characteristics and behaviours that enabled First Nations People to survive this event continue to be employed by Sydney's First Nation Peoples to cope with ongoing stresses.

Left Bangara Dance Company. Photo: Katherine Griffiths

Learning from Elders: resilience and resistance

An impactful shock

The impacts of European colonisation of the Sydney Basin including:

- dispossession from people, country, families, culture, kinship systems
- massacres and conflict, resistance.

Ongoing stresses

Daily, ongoing stresses described by participants include

- racism
- child removal
- access to traditional lands
- educational issues
- over-representation in the legal system
- over policing
- access to resources
- inadequate and unaffordable housing.

Aboriginal and Torres Strait Islander people are proud of the gains made by themselves, their families and communities in managing their response to this shock and these stresses. They identified resilience as a direct result of the fight to survive.

> **"Resilience comes from our identity, a sense of belonging and community."**

Sydney's First Nations language groups

Bediagal, Bidjigal, Birrabirragal, Bool-bain-ora, Boorooberongal, Borogegal, Burramattagal, Cabrogal, Cadigal, Cannalgal, Cannemegal, Cammeraigal, Carigal, Cattai, Gomerrigal, Gorualgal, Gweagal, Kameygal, Kayimai, Kurrajong, Mulgoa, Muringong, Muru-ora-dial, Norongerragal, Terramerragal, Tagary, Toogagal, Wallumattagal and Wangal.

Right Smoking ceremony. Photo: Katherine Griffiths

"I'd say Aboriginal people are the most resilient in the world."
– Elder

Our people

As one of the most diverse cities in the world on the basis of place of birth, Sydney is home to vibrant and thriving communities.

Aboriginal and Torres Strait Islander peoples and people from over 200 different cultures from around the world now call Sydney home. Collaboration within and between these communities, governments and businesses will influence the future of our city, and our resilience.

> "We pull together in Campbelltown. But the area is growing so fast I think some of the infrastructure is not keeping up."

Robyn and Dennis Wardrope, residents of Campbelltown

> "Resilience is the habit of collaboration."

Greg Dyer, pervious General Manager, Parramatta City Council

Above Redfern: Christmas party. Photo: Katherine Griffiths
Above right Claymore. Photo: Sarah Rhodes
Right Robert Tickner (OAM), Bryna Lipper (100RC, Senior Vice President City and Practice Management), Lord Mayor of the City of Sydney, Clover Moore, Beck Dawson (Chief Resilience Officer), Greg Dyer (previous General Manager, City of Parramatta Council). Photo: Katherine Griffiths

Voices of Sydney

> “By working with all tiers of government and business, we look forward to creating a stronger, safer, more connected Sydney for everyone.”

Lord Mayor of Sydney, Clover Moore

> “We have a lovely beach, fantastic pool. We have enough shops to get necessities for the week. Everything is in walking distance. But there is not enough public transport with people working in the city and the roads are always congested.”

Sylvana Chandler, resident of Dee Why

> “This process has been an education in the need for openly sharing our challenges.”

Alan Stoneham, General Manager, Penrith City Council

Above left Photo: Sarah Rhodes
Above right Dee Why Beach. Photo: Sarah Rhodes

A multicultural city

Sydney's communities today are home to people from across the world. Sara Mansour shares how multiculturalism in her community in Punchbowl shaped her experience and feeling of home in Sydney.

"Home means a lot of things to different people but is ultimately underpinned by the notion of being in a place that is familiar and safe."

Sara Mansour, Bankstown Poetry Slam

Above Parramatta. Photo: Sarah Rhodes
Left Parramatta River. Photo: Sarah Rhodes
Right Bankstown: Sara Mansour, Poetry Slam. Photo: Katherine Griffiths

Poem of Resilience

by Sara Mansour, Bankstown Poetry Slam

So when people ask me where I'm from
I tell em Punchbowl
More often than not, they smile, and reply
"No, where are you FROM?"
I sigh, roll my eyes and in an explanatory
tone respond
"PUNCHBOWL".
You know.. It's near Bankstown
The city where mouths do not ebb the flow of
"Welcome" in over 60 different tongues
Where over 100 nationalities are housed under
one postcode
This is my ode to the only place I know
Where one is told to go back
Because everyone understands
This is my ode to home

My Australia is
Walking in the streets of Punchbowl
With the smell of freshly roasted Lebanese coffee
kissing the Asian bakeries good morning
The eucalyptus towers overhead and the
frangipanis scent my breath
As we sing the unofficial national anthem
"I come from a land down unda..."
Living from beat to beat
Bumping down the streets
With Tupac on our tongues and
We're headed for the beach
Water so unapologetically salty to the eyes
But we take it in our stride
Remembering all the lessons at Greenacre pools
and at school
When Cronulla hit high tide

My Australia is barbeques, or as my dad still
says BURBEQUE
As the meat sizzles on the fire, tabouli and tomato
sauce and homemade pavlova cake served alongside
some knafeh
The perfect cultural dichotomy
And its not hard to see no matter our creed we always
rep our team
Hashtag Wanderers FC
This country will never be tainted by café sieges, we
will always ride together from the mountains where the
bushfires rage, we stand together down to the shore
where the lifesavers age
Under that great southern sun
My Australia is one
Where women wear their saris and their colourful hijabs
proudly
Men don sweat stained blue collars like war badges
You can get the best pho in Sydney
12 dollar woodfired pizzas, the realest Lebanese
and Chinese
And you feel at ease because no one judges your
garlic breath or the
tabouli stuck in your teeth
It is finding the most authentic spices
In shops where signs in foreign languages sit like
jewelled crowns atop their doors
It is neighbours passing barbequed meat over the fence
And always saying hello
It is all the stoic traditions
It is stoic- a community that has been hardened by
media headlines
It is targeted
It is judged
It is 3am sirens and perceived thugs

But it is also where the calls to prayer
Gently interludes with the ringing of church bells
It is co-existance
And artistic resistance
Like the 4elements youth hiphop festival
And the largest poetry slam in the country

It is my Dad's voice 25 years on
Accent thick with resilience
Warm like an Autumn breeze
Smelling of petrol and truck smoke and all the forgotten
things
All the zaatar and the tahini and the crushed petals that
were once dreams
Saying
We are lucky
It's not perfect.
But it's home.
It will never be perfect, but it will always be home
My Australia is home. When the rest of the world
says no.

Our strategy

In this section

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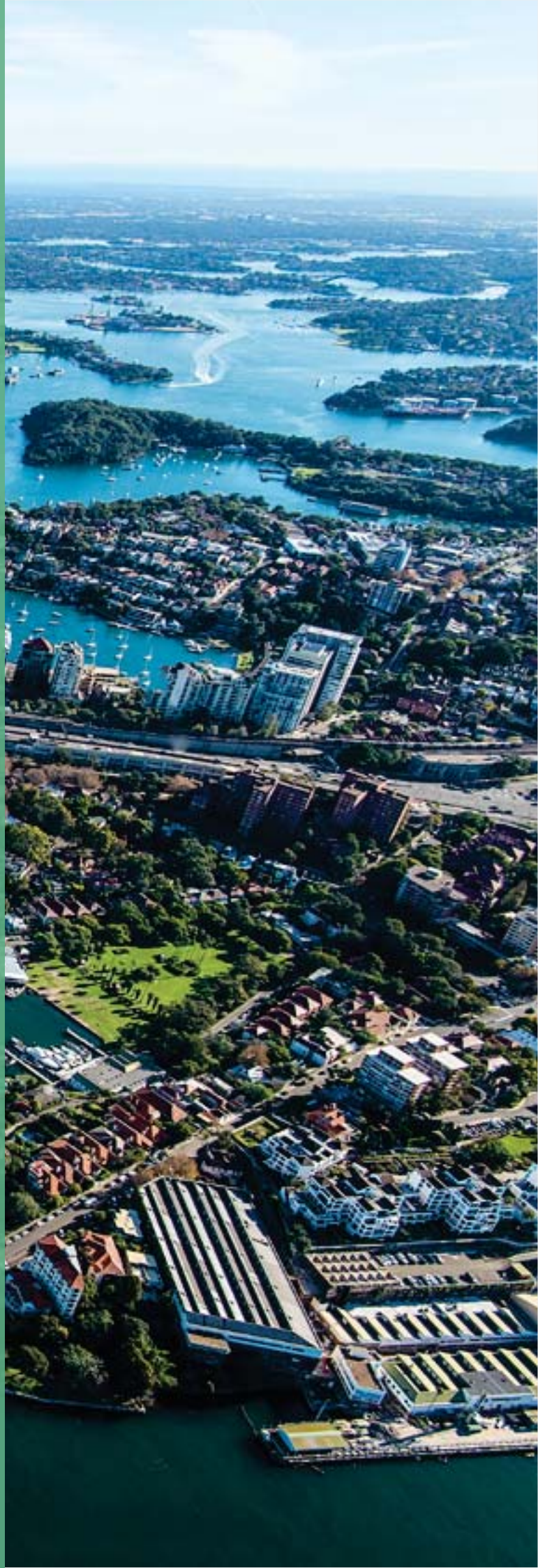


RESILIENT SYDNEY | 100 RESILIENT CITIES

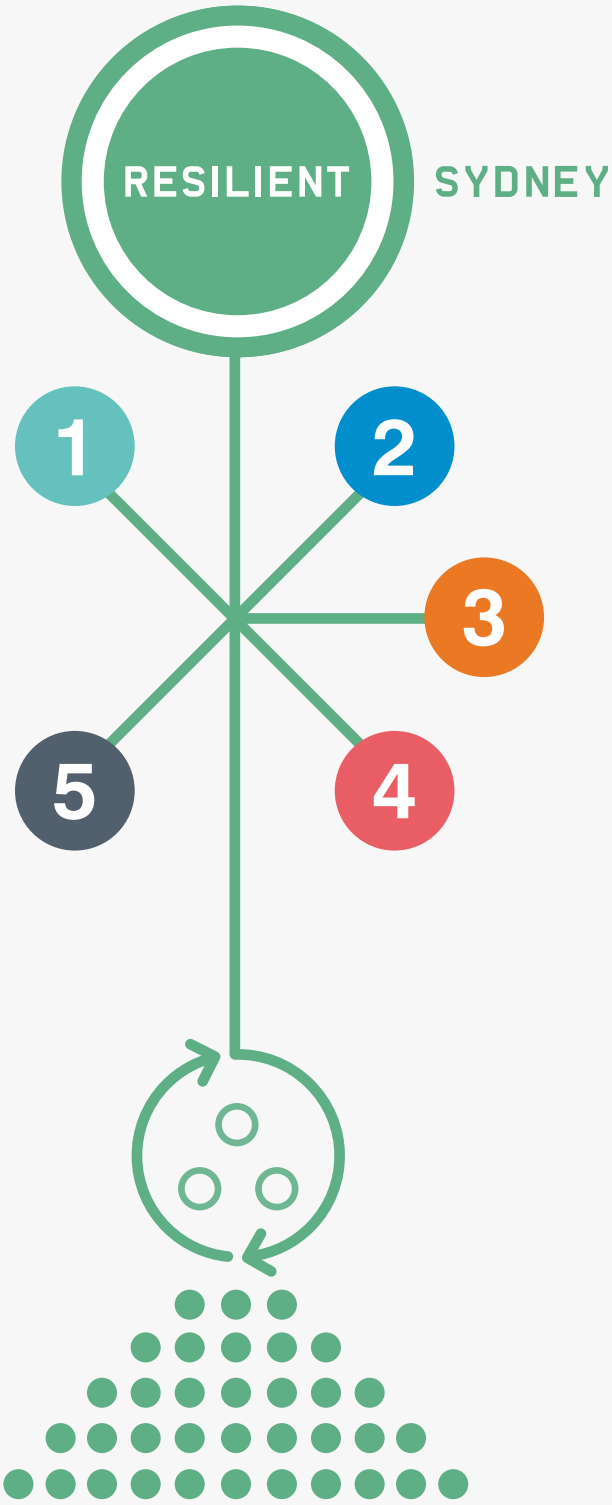
Strategy structure

One vision

Five directions

Thirty-five actions

- Flagship actions
- Supporting actions
- Aligned actions



Previous page Photo: iStock/Brian Raisbeck

Our resilience challenges and opportunities are described as five directions for resilience in Sydney.

DIRECTION 1

People centred city

We include communities in decision making for growth and equity, so people connected to where they live and able to access transport, affordable housing and education and employment opportunities.

DIRECTION 2

Live with our climate

We adapt to sustain our quality of life and our environment, so people have access to public and recreation space and natural environments throughout the city for climate comfort and safety, health and city connections.

DIRECTION 3

Connect to strength

Every Sydneysider will feel they belong in Sydney as part of the community with equal access to engage in society, the economy and all the city has to offer.

DIRECTION 4

Get ready

We know how to prevent, prepare, respond and recover, where Sydneysiders and organisations understand the risks they face and how to work together to respond to them, now and in the future.

DIRECTION 5

One city

We are one city, where governing organisations across Sydney pledge to build their capacity to understand and manage vulnerabilities, interdependencies and risks for everyone in a resilient metropolitan Sydney.

Key to the actions

The strategy has five directions in a five year action plan of 35 actions. The following outline explains the types of actions and roles and responsibilities of participants.

Action status

Actions are activities that are being initiated, strengthened or amplified in Sydney.

- initiate: action has began as a result of this strategy, bringing together new partners to solve Sydney's challenges
- strengthen: action is under development though requires more support, research or new partners to be a more effective intervention in our city
- amplify: action is underway in an effective pilot or small scale and will now be shared for wider adoption across Sydney.

Flagship actions

One or more Flagship Actions will spearhead community change for each direction. These have been selected because individually or collectively they:

- address our resilience challenges and opportunities by understanding risks, knowing our role in managing these risks, including those impacted in our decisions, collaborating with others and investing to take action;
- increase capacity for a resilience based approach where the action supports Sydney to:
  - prevent or mitigate stresses and shocks
  - adapt to unexpected shocks and stresses
  - rapidly return to normal and revitalise after disruptions
  - access benefits when there are no disruptions
  - improve equity and prosperity in times of stability.
- deliver tangible benefit to our city and its people.

Flagship Actions are either underway now, or have been identified as a priority for the first year of implementation of the Resilient Sydney strategy.

Supporting actions

Supporting actions are important, often structural activities that enable the longer term delivery of the resilience direction. These are more likely to be facilitated by a third party rather than Resilient Sydney.

The role of the Resilient Sydney Office in delivering flagship and supporting actions:

Flagship actions are also those in which Resilient Sydney will play an active and material role, including:

- direct participation in the activity – staff from the Resilient Sydney Office will attend meetings, contribute strategic advice, undertake research and/or project specific tasks
- providing evidence and the resilience decision making framework to guide development of the action through:
  - problem definition - identifying shocks, stresses, interdependencies and vulnerabilities
  - engagement to co-design the action – ensuring a diversity of stakeholders and communities are engaged, and the most impacted are included
  - clarifying the role of the collaborative action team and each participant in delivering the action/outcome
- providing a framework and support to develop a collective impact; and
- monitoring and evaluating the action with participants.

The Resilient Sydney Office may also provide resources, including support for funding, staff or other support as agreed through the Resilient Sydney Steering Committee.

Aligned actions

Aligned actions have been chosen for their collective capacity to deliver change for resilience.

Engagement to develop the Resilient Sydney strategy highlighted activities currently being undertaken across our city, state and country that play a vital role in contributing to Sydney's resilience. Aligned actions are included to promote these activities, helping to amplify their reach and scale.

Others are proposed activities to be developed in future iterations of Resilient Sydney, once the flagship and supporting actions are underway.

Descriptions of aligned actions are brief and include an outline of the activity, the challenge it will address, and where relevant the organisations or individuals currently involved.

The role of the Resilient Sydney Office in delivering Aligned actions:

For aligned actions that are already underway the Resilient Sydney Office will:

- provide active promotions through our networks via newsletters, social media, online platforms and media
- provide connections and networking opportunities through our events and engagement activities
- provide a framework and support to develop a collective impact; and
- monitor and evaluate the action with participants.

The Resilient Sydney Office may play a more active role in these actions in future.

Roles and responsibilities

Facilitator

Facilitators are individuals or organisation who have agreed to facilitate an action over the first one to five years of implementation of the Resilient Sydney strategy. Facilitation involves.

- strategic coordination of initial efforts. These include:
  - building shared understanding of the challenges
  - identifying other stakeholders/collaborators to join a collaborative action team
  - agreeing the process for working together; and
  - identifying and progressing formal arrangements such as governance structures and funding arrangements.
- strategic coordination of co-design for measures, monitoring and evaluation of the action.
- This may be provided by facilitators, to be agreed with the Resilient Sydney Office. This may involve providing backbone administrative support, funding and resources, and monitoring, evaluation and reporting to the Resilient Sydney Office.

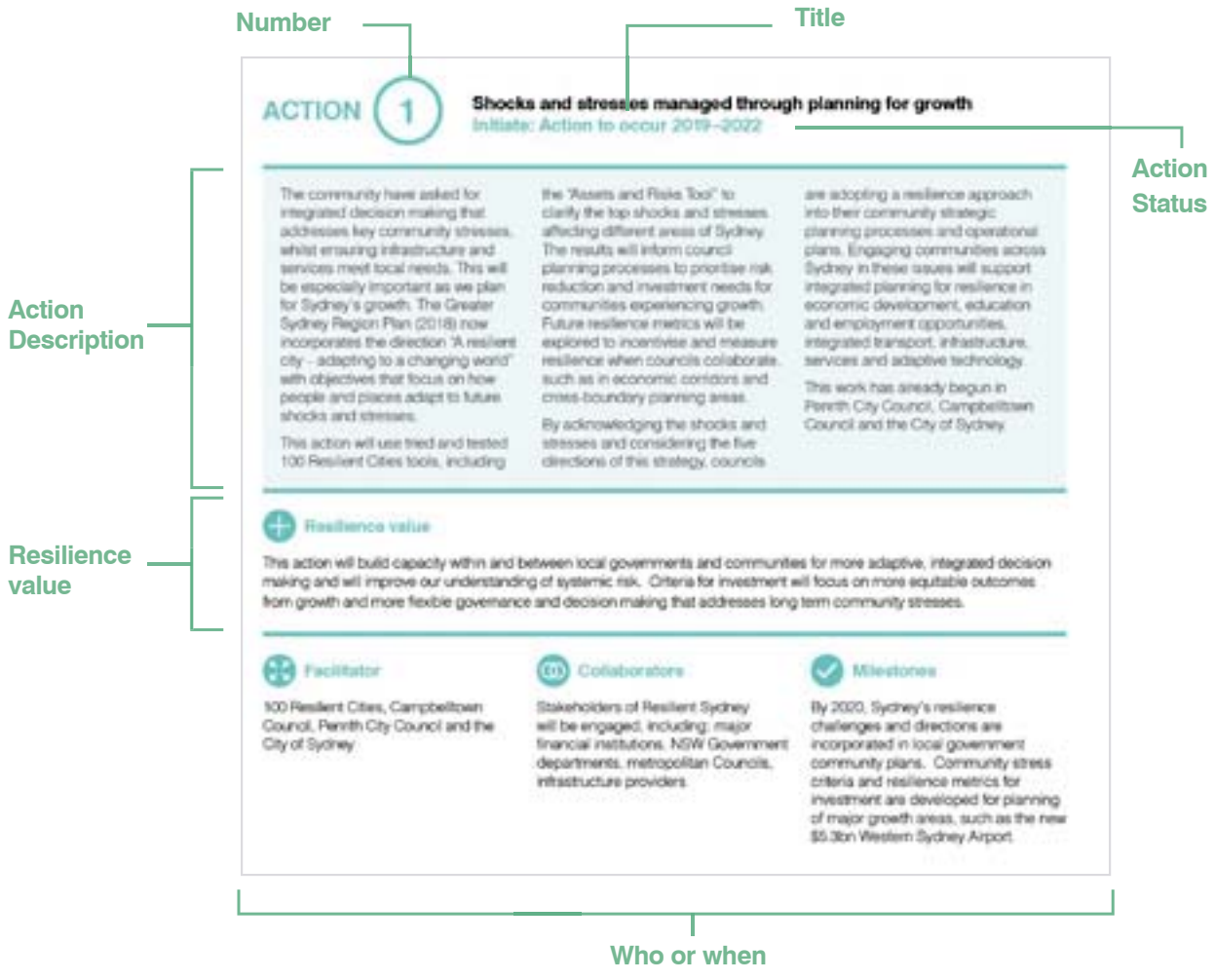
Collaborators

Collaborators are individuals or organisations who have agreed to participate in the design and/or implementation of an action. Collaborators will engage in one or more of the following activities:

- working with facilitators and other collaborators in an action team to build a shared understanding of the challenges, identifying other stakeholders/collaborators, working to agree the process for working together and participating in formal arrangements such as governance structures and funding arrangements
- practical tasks to deliver the actions; and
- monitoring and evaluation activities.

Collaborators may provide practical support such as funding and resources.

Key to the actions



Deskpack

DIRECTION 1

People centred city

Resilience challenge: Inequitable growth

Our city is growing, inequity is rising, and infrastructure and services lag behind.

Sydney's population is rising rapidly. It is projected to grow from 5 million people in 2016 to 6.4 million by 2036[1]. Most of this growth will occur in the west and south west - 45% of Sydneysiders will live there 2031 – as well as some parts of the inner east. Infrastructure, transport, schools and health services have not kept up with population growth in these areas.

Sydney is the most unequal major city in Australia[2]. Lower income earners tend to live in Sydney's western and south western growth areas. These areas are less well served by public transport infrastructure, essential social services and job opportunities. Most commutes from these places to surrounding areas are made by car.

Sydney is the second least affordable city in the world with the median house price 12.2 times the median household income. The average household is required to spend 28% of their income on rent to access a rental dwelling, putting them very close to the 30% rental stress threshold[3]. These households are likely to be more vulnerable to the impacts of sudden economic disruptions.

Our economy continues to grow, but the benefits of prosperity are not shared by everyone.The short timeframes and lack of integrated and inclusive decision making contribute to growing inequalities and impactful stresses. Opportunities for change lie in longer term planning for more resilient infrastructure in growth areas, including the most impacted in decisions that affect them and better collaboration between governments and agencies.

Housing

- Sydney is the second least affordable city in the world[5]. The median house price in Sydney is 12.2 times median household income[6].

Transport

- Sydney has the highest rate of trips by private vehicles in Australia (up to 80%), especially in the west and southwest[7].

Income and jobs

- 20% of all income goes to 1% of Sydney's population in Sydney's east[8]. Less than 6% of all income goes to earners in Blacktown, Campbelltown and Penrith[9].
- 37% of all employment is located in Sydney's CBD[10].
- Manufacturing (which is in decline) employs the most people in the west, followed by retail, health care and social assistance[11].

Education

- Western Sydney has lower high school completion rates than the rest of Sydney[12].
- 71.9% of people in northern Sydney and 44.9% in south western Sydney have post-school qualifications.
- Most of Sydney's major universities are located in the east

Health Services

- Western Sydney has almost 10% fewer hospital beds per 100,000 residents than in other parts of Sydney, and fewer staff proportionally. Yet there is higher demand, and higher rates of admissions in western Sydney[13].

People centred city objective

We include communities in decision making for growth and equity

Our community highlighted the need for affordable access to infrastructure, services, transport and shelter for everyone in Sydney, regardless of geographic and economic position. They also asked for skills and employment opportunities that are accessible for everyone in metropolitan Sydney.

Our community asked us to take a people-centred view of our city, including them in the investment and planning decisions that shape their lives.

This direction addresses the priorities of our metropolitan community to deliver benefits that will help people all over Sydney to thrive. The following principles will guide our actions:

Resilient growth

We will take opportunities to invest in growth, transport connections and employment options that improve the resilience to key stresses of metropolitan Sydney, bringing multiple benefits and reducing vulnerabilities for all residents.

Inclusion

We will provide our diverse communities with a genuine say in the decisions that affect them, ensuring those most impacted are included.

Equity

We will put people first by ensuring skills and services are accessible to communities across metropolitan Sydney.

This direction aligns to:

Previous page Surry Hills: Library and Community Centre. Photo: Katherine Griffiths
Icons UN Sustainable Development Goals

[1] Greater Sydney Commission, referencing NSW Department of Planning and Environment 2016.
[2] Income Inequality across Australian Regions during the Mining Boom: 2001–11. (2015). David A. Fleming & Thomas G. Measham. Australian Geographer Vol. 46 , Iss. 2,2015 CSIRO.
[3] Rental Affordability Index, RAI Release Report (2015). Community Sector Banking, Shelter Australia and SGS Economics & Planning
[4] www.domain.com.au/news/sydney-melbourne-houses-in-worlds-top-five-most-unaffordable-demographia-20160125-gmd7x2/
[5] News.com.au, 2016, Australian City Has Come In as Second Least Affordable in Housing Survey
[6] Infrastructure NSW, 2014, State Infrastructure Update
[9] SGS Economics and Planning, 2016, Effective Job Density
[10] WSROC Economy and Employment, accessed 25/01/17 wsroc.com.au/issues-campaigns/economy-and-employment
[11] WSROC, 2016, Education
[12] WSROC, 2016, Education
[13] WSROC, 2012, Comparative Study of Health Services

Flagship action

ACTION 1

Shocks and stresses managed through planning for growth

Initiate: Action to occur 2019–2022

The community have asked for integrated decision making that addresses key community stresses, whilst ensuring infrastructure and services meet local needs. This will be especially important as we plan for Sydney's growth. The Greater Sydney Region Plan (2018) now incorporates the direction "A resilient city – adapting to a changing world" with objectives that focus on how people and places adapt to future shocks and stresses.

This action will use tried and tested 100 Resilient Cities tools, including the "Assets and Risks Tool" to clarify the top shocks and stresses affecting different areas of Sydney. The results will inform council planning processes to prioritise risk reduction and investment needs for communities experiencing growth. Future resilience metrics will be explored to incentivise and measure resilience when councils collaborate, such as in economic corridors and cross-boundary planning areas.

By acknowledging the shocks and stresses and considering the five directions of this strategy, councils are adopting a resilience approach into their community strategic planning processes and operational plans. Engaging communities across Sydney in these issues will support integrated planning for resilience in economic development, education and employment opportunities, integrated transport, infrastructure, services and adaptive technology.

This work has already begun in Penrith City Council, Campbelltown Council and the City of Sydney.

Resilience value

This action will build capacity within and between local governments and communities for more adaptive, integrated decision making and will improve our understanding of systemic risk. Criteria for investment will focus on more equitable outcomes from growth and more flexible governance and decision making that addresses long term community stresses.

Facilitator

100 Resilient Cities, Campbelltown Council, Penrith City Council and the City of Sydney and Bayside Council.

Collaborators

Councils involved in the Eastern Economic Corrider, and the Western City Deal are collaborating to consider resilience in their plans.

Milestones

By 2020, Sydney's resilience challenges and directions are incorporated in local government community plans. Community stress criteria and resilience metrics for investment are developed for planning of major growth areas, such as the new $5.3bn Western Sydney Airport.

"Sydney is one city. We need to plan and invest so everyone thrives."

Lindy Deitz, General Manager, Campbelltown City Council

Far Left Fairfield: aerial view of Western Sydney suburbs
Left Harris Park. Photo: Sarah Rhodes

Supporting actions

ACTION 2

Network metropolitan practitioners for community agency

Initiate: Practitioners network began May 2017

The community have asked for a greater say in the strategic decisions that shape metropolitan Sydney, and their lives. This will require commitment and effort on the part of multiple organisations within our city, both, to engage communities and ensure their views are better reflected in metropolitan-scale decisions.

The first step is connecting community research and engagement practitioners - the people within these organisations with deep understanding of community views and priorities, and specialist expertise in the design, delivery, analysis and reporting of engagement activities. Sydney's practitioners are already delivering innovative activities within their individual organisations, and are well-placed to advocate for the inclusion of community views in key decisions. They are developing options for the co-design of engagement platforms, processes, tools and communications that people want to use.

This action began in May 2017 with meetings of Sydney's government engagement practitioners in a new network. The network will:

- identify community priorities across metropolitan Sydney
- build data around current engagement practice
- explore best practice and innovation
- build professional capacity
- develop consistent standards for how we engage communities in the decisions that affect them.

The network will explore community engagement in strategic decisions that address metropolitan scale risks, challenges and investments. In other global cities, these decisions are made through techniques like large, representative community reference panels. The network will explore these techniques for Sydney. The network will enable engagement practitioners to work together to ensure those most impacted have a voice, and key strategic decisions are truly people-centred.

Resilience value

This action will create a network of practitioners from diverse organisations and communities to collaborate for awareness and integration of community views within key planning and investment decisions. It will increase equity and self-regulation through more people-centred decisions.

Facilitator

Resilient Sydney

Collaborators

All metropolitan councils, NSW Government departments and agencies, Greater Sydney Commission

Milestones

Year 1 – Agreement on ways of working together, governance structure formalised, progress on establishing baseline data

Supporting actions

ACTION 3

Collaborate for cross-city active transport

Initiate: Practitioners network began May 2017

We face challenges around connections and mobility as our city grows. These issues become critical during shock events when transport options are limited.

We are also increasingly sedentary and chronic lifestyle illnesses are impacting the health and wellbeing of our communities.

This action will address these issues by connecting mobility and transport practitioners in a metropolitan network. The network will build capacity for collaboration and innovative solutions. Participants will implement these solutions to create active transport connections across metropolitan Sydney.

In May 2017 local and state government practitioners began to share knowledge on active transport management and policies.

Over the coming years the network will explore opportunities for standards for a cross city bicycle network, bike share regulations, walkable neighbourhoods and integrated and accessible mobility planning.

Resilience value

By connecting diverse practitioners this action will build capacity for adaptive, integrated active transport that facilitates adaptation by enabling communities to manage their health and wellbeing, and safety during a crisis.

Facilitator

City of Parramatta and City of Sydney

Collaborators

Transport for NSW – active transport and policy teams, transport planners in metropolitan councils

Milestones

Year 1-2 – Network formalised, joint policy emerging

"This process has been an education in the need for openly sharing our challenges."

Alan Stoneham, General Manager, Penrith City Council

Far Left Sydney: bike riders in the city. Photo: Katherine Griffiths
Left Waverley: Bondi Junction transport hub. Photo:Hamilton Lund

Aligned actions

ACTION 4

Support people to work closer to home

Amplify: Advocacy

The costs and time of work related travel are a chronic stress on Sydney families where over 80% of all commuting still occurs in a private vehicle.

Work by Deloitte Western Sydney through the Shaping Future Cities project is creating strong local connections and economic transformation by enabling people to work close to where they live, reducing the time and cost of commutes.

This action seeks to amplify work promoting flexible work arrangements, co-working spaces, digital tools, use of vacant suburban spaces for startups, and new training for young people.

The Greater Sydney Commission are also highlighting the benefits of working close to home via the concept of a '30 minute city' in the Greater Sydney Region Plan.

ACTION 5

Improve access to health precincts

Amplify: Advocacy

Accessing health precincts is difficult without access to private vehicles, especially in the growth areas of our city. Solutions are increasingly available and this action highlights three different approaches for wider adoption:

- e-health initiative of Wollondilly Health Alliance, a partnership of local, state and federal governments has successfully trialled digital consultant appointments (e-health) in the growth areas of Sydney, reducing travel
- advocacy for new on-demand health transport services in the Greater Sydney Region Plan
- active transport plans with priority routes to and from health precincts.

"Resilience is the habit of collaboration."

Greg Dyer, former General Manager, Parramatta City Council

Above Wollondilly: the Wollondilly Wanderer community health bus
Right Campbelltown. Photo: Sarah Rhodes

Aligned actions

ACTION 6

Build community capacity through co-design

Strengthen: Research

Sydney communities asked for more involvement in designing solutions for the issues that affect them, providing direct user experiences into decision making. Organisations such as The Australian Centre for Social Innovation, the Foundation for Young Australians and Youth Action are demonstrating the value of community involvement in designing and operating services with the communities who use them. These include child and youth services and family violence support services. Communities and people who participate learn new skills, make lasting connections and contribute their expert knowledge of the challenges to ensure services are effective in meeting their needs. Amplifying user engagement in service design and delivery will build the capacity of our community to solve resilience issues. This action will bring together partners to deliver a leadership paper and event, inviting policy change to engage more residents in the design and provision of services.

ACTION 7

Advocate for affordable housing for everyone

Strengthen: Research

Housing affordability is a critical issue for communities across metropolitan Sydney. The financial accessibility of housing is determined through a complex set of market conditions, investment controls, tax settings, wage trends and city planning controls. This system is influenced by all three layers of government and the development and housing industries.

Collective leadership across metropolitan Sydney is needed to develop an urban housing agenda to increase access to affordable housing for people on all incomes, and aiming to decrease homelessness. Coordination by collectives such as the Sydney Alliance are bringing focus to this issue. Resilient Sydney will support research towards a policy agenda that enables financially accessible housing for everyone.

ACTION 8

Develop skills for equity

Strengthen: Information sharing

Opportunities and education are not the same for everyone in Sydney due to the uneven impact of chronic stresses across the city. Businesses, the community sector and governments already provide tools and services to help, but these are not well known. This action encourages organisations, especially councils, to digitally share and amplify initiatives that focus on improving equity through knowledge sharing with groups adversely affected, such as providing:

- affordable insurance for low income earners
- financial literacy training for younger and older women
- job retraining and skills development for over 50s
- free English lessons for migrants and refugees
- drivers licence training for Indigenous and vulnerable young people to provide access to training and jobs.

DIRECTION 2

Live with our climate

Resilience challenge: Pressure on our health, the environment and economy

Our climate and weather are intense, chronic illness is increasing and our environment is under pressure.

Sydney's weather is changing: the climate is getting hotter and storms are becoming wilder and more frequent. Sea levels are rising, and heatwaves, droughts and bushfires are becoming more frequent and more intense. These trends are forecast to continue[14].

Extreme heat is our biggest risk. Vulnerable populations with an underlying illness are more likely to die in a heatwave. Heatwaves cause soaring demands for energy, water and health services[15]. Our primary growth areas in Western Sydney are located inland in relatively hotter areas. But new homes are usually not constructed to provide maximum protection from heatwaves and there is less tree canopy cover to reduce surface temperatures.

Our communities are less able to exercise outdoors in some parts of the year due to heat, and we have rising incidents of chronic disease such as obesity and diabetes. Chronic illness and lifestyle diseases are now the highest causes of death in Sydney.

Our electricity network is reliable, but extreme weather causes problems. Wild storms bring down power lines. Demand soars when people use their air conditioning during heatwaves and refrigerators work overtime. Extreme weather is the biggest cause of electricity network failure, along with flooding. The growth of investment in innovative energy, water and mobility technologies is impacted by market settings. The private sector is already investing in more resilient built environment and infrastructure.

Extreme weather

- In an average year Parramatta already experiences 13 days where temperatures are 35 degrees and over.
- Cities are often hotter than surrounding areas. This is because we clear vegetation and replace it with concrete, bitumen and other heat absorbing materials, resulting in energy being trapped in city buildings and infrastructure. This is then radiated back out, heating the air and people.

Chronic disease

- Around 50% of our population is overweight or obese – 45% of people in the north and 55% of people in the west[16].

Open space and biodiversity

- Every 10 per cent increase in tree canopy can reduce land surface temperatures by 1.13 degrees C[17].
- Average tree canopy cover for urban NSW (including metropolitan Sydney and Newcastle) is 26.64% in 2016, down 0.83% from 27.47% in 2009[18].

[14] CSIRO and BoM, 2015, Climate Change in Australia and NARCLiM, 2016, Metropolitan Sydney Climate Change Snapshot
[15] NARCLim, 2016, Metropolitan Sydney Climate Change Snapshot
[16] Department of Planning 2013, Towards a Resilient Sydney – Socio-Economic Profile.
[17] Technical Guidelines for Urban Green Cover in NSW. NSW Office of Environment and Heritage.
[18] Where should all the trees go? Investigating the impact of tree canopy cover on socioeconomic status and wellbeing in LGA's. (2017). Amati, M. at al. RMIT University with CSIRO Data 61, University of Western Australia. Referenced at: 202020vision.com.au/

Live with our climate objective

We make changes to sustain our quality of life and our environment.

Our community are concerned about the risks posed by extreme weather, and the daily impacts of a changing climate. They have asked for actions to make homes and neighbourhoods safe, green and liveable.

Consultation also revealed a need to improve understanding of risks and impacts as being key in preparing our community and our city.

Our city, state and nation have made global commitments to make the changes necessary to live with, and adapt to, our climate. These necessitate an understanding of how our city contributes to local and global climate changes, as well as actions to manage and mitigate risks.

As we build our capacity to manage extreme weather, it is vital we grow our economy by leveraging the market development and employment opportunities that arise as we put ideas into action.

This direction addresses community priorities and our challenges via the following guiding principles:

Local adaptation

We will build awareness of risks and capacity for local action to manage extreme weather and changes to our climate across our city.

Global performance

We will honour our global commitments to understand our contributions to our changing climate and manage and mitigate the risks posed by extreme weather.

A diverse economy

We will invest in diverse technologies and tools for mobility, energy, water supply and resilient buildings and infrastructure to build new markets and jobs in our economy.

This direction aligns to:

Previous page Storm over Sydney. Photo: iStock/RugliG
Icons UN Sustainable Development Goals

Flagship action: Cool suburbs - turn down the heat

ACTION 9

Policy and action to cool homes and streets
Initiate: Program began 2017

Extreme heat is our biggest risk in terms of shocks. It affects all our communities, with those in western Sydney experiencing the most significant impacts including decreasing safety, health, wellbeing, and increasing living costs.

Reducing impacts for western Sydney requires large scale collective action. The first step is connecting all the organisations and individuals managing extreme heat and its impacts to build a consistent understanding and approach to the challenge.

This action began in 2017 when the Western Sydney Regional Organisation of Councils (WSROC) brought together a multi-stakeholder group involving state and local government, universities, business organisations, health agencies and scientific research institutions.

Progress has been swift to date. The group has begun by:

- establishing a backbone governance structure
- establishing baseline data and commissioning new research
- delivering two forums to review the issues and agree priorities
- developing a "Cool Suburbs" strategy for rating housing estates and existing suburbs
- advocating for extreme heat management as a NSW Premier's priority.

The Cool Suburbs initiative will use the latest in data sensing, materials science, built environment planning and performance monitoring to offer a "Cool Score" for new and existing suburbs. It will pilot a voluntary measurement and performance tool to identify the places in a city that will be lower in temperature and more comfortable, productive and safer for humans in times of extreme heat.

Cooling initiatives have already been tested in Sydney in terms of cost effectiveness, timeliness and effect. These include: cool roofs; permeable or porous roads, driveways and footpaths; cool building and shading designs; irrigation and tree canopy cover. This action will engage householders, developers, governments and businesses to implement practical changes to our streets and homes for a cooler, safer city.

Resilience value

This collaboration of diverse stakeholders is building a shared understanding and awareness of how to reduce the impact of extreme heat. They will integrate science, planning, product design and performance tools to reduce vulnerability of communities to extreme heat and support liveability and wellbeing. This new voluntary governance approach is pioneering self-regulation for managing climate risk in our city.

Facilitator

Western Sydney Regional Organisation of Councils (WSROC) including WSROC's member councils and councils of the Western Parkland City: Blacktown, Blue Mountains, Cumberland, Fairfield, Hawkesbury, Liverpool, City of Parramatta, City of Penrith, Greater Sydney Commission and Resilient Sydney

Collaborators

ASBEC (Australian Sustainable Built Environment Council), Cooperative Research Centre (CRC) for Low Carbon Living, CSIRO, Government Architect NSW, NSW Office of Environment and Heritage (OEH), Resilient Sydney, Western Sydney Health Districts, Western Sydney University

Milestones

Years 1 – 3; Cool Suburbs strategy and action plan published, targets set to: reduce temperatures, improve canopy cover, reduce morbidity and mortality and monitor economic impacts of extreme heat

Left Penrith: heat reflective house roofs in Sydney. Photo: iStock/imamember

Supporting action

ACTION 10

Develop investment in resilient buildings, assets, precincts and cities

Strengthen: Tool development began 2017

Adapting our infrastructure and built environment to reduce the impacts of extreme weather is critical to maximise the safety and comfort of Sydney communities. Business is increasingly aware of the need to manage risks and understand interdependencies, as well as the potential for innovation and new economic opportunities.

Australia's industry associations have began pioneering voluntary tools and processes for assessing building, infrastructure asset and precinct resilience. A range of tools is needed to support decision making about climate risks and adaptation priorities. Australian rating tools support businesses to quantify and explain their performance for local and international benchmarks for investment.

This action will support business-led decision making tools for asset and precinct resilience. Once adopted, these will enable future use of investment products that improve resilience such as resilience bonds. The following tools are now under development:

- Buildings and precincts: Green Building Council of Australia (GBCA): Green Star Resilience Innovation Challenge
- Infrastructure assets: Infrastructure Sustainability Council of Australia (ISCA): ISCA v2.0 Resilience Credit
- Government infrastructure and asset interdependencies: NSW Office of Environment and Heritage is piloting a tool 'XDI – Sydney' that quantifies risks to interdependent critical infrastructure in Sydney, to inform prudent investment, in partnership with the City of Sydney, Sydney Water, Transport for NSW, Sydney Trains, Roads and Maritime Services, and in consultation with emergency services and Infrastructure NSW.

Resilience value

This action will build awareness and management of risk in investment decisions for buildings, infrastructure and places. It will ensure future investment focuses on adaptive technologies and tools.

Facilitator

Green Building Council of Australia

Infrastructure Sustainability Council of Australia

NSW Office of Environment and Heritage

Collaborators

City of Sydney, Department of Planning and Environment NSW, Office of Environment and Heritage, Roads and Maritime Service, Resilient Sydney, Sydney Trains, Transport for NSW, NSW Office of Emergency Management

Milestones

Years 1-3. Sector based tools and accreditation for resilience. Measure of the value of assets rated using resilience tools for buildings, assets and precincts across metropolitan Sydney.

Right Parramatta: household solar panels are increasing. Photo:nullplus

Supporting action

ACTION 11

Enable affordable access to renewable and resilient energy

Strengthen: Research began 2018

Access to secure, clean energy supply was a key concern for our community, particularly during extreme weather when network failures are most likely to occur. They saw renewable energy as a key solution, emphasising the importance of affordability for vulnerable people.

This action has began, bringing new partners together to collaborate and develop a large scale renewable energy and energy storage model for take up byhouseholds in the city. The model will encourage institutional investment in household energy to make solar power accessible and affordable for more people.

This is especially necessary in the hottest areas of our city where access to cheaper air conditioning can be lifesaving. Investment in complementary battery technology has the potential to provide local energy backup in times of peak demand, whilst also reducing our contribution to climate change.

Resilience value

This action will build awareness and management of risk in investment decisions for buildings, infrastructure and places. It will ensure future investment focuses on adaptive technologies and tools.

Facilitator

Southern Sydney Regional Organisation of Councils (SSROC)

Collaborators

Northern Beaches Council, the City of Sydney and the NSW Office of Environment and Heritage

Milestones

Year 1-3: Enabling structural and procurement models, expressions of interest invited for participation.

Aligned actions

ACTION 12

Adopt urban resilience in research and teaching curricula

Initiate: Curriculum development

Academic research and teaching need to support systemic and integrated planning and management of our city, buildings, infrastructure and places to improve resilience outcomes for metropolitan Sydney. This action will ensure tomorrow's decision makers and influencers are able to understand and manage our risks as our city grows.

This action will bring international expertise on resilience curricula from 100 Resilient Cities' Rebuild By Design program together with local academics, teachers and students. They will co-design resilience units and curricula applicable to high school, tertiary and vocational education in Sydney via a tried and tested engagement process used throughout the 100 Resilient Cities network.

Sydney's academic institutions are already engaging in international urban resilience research and local implementation practices. In 2016, the University of NSW appointed a professorial chair in architecture with a focus on urban disaster resilience. The University of Sydney, University of Technology Sydney and Western Sydney University have began integrating resilience content into courses.

This process will bring a multi-disciplinary approach to creating education focused on reducing inequity, adapting to a changing climate, growing innovation and the green economy, increasing social cohesion, emergency preparedness and collaborative governance for change.

ACTION 13

Measure metropolitan carbon emissions and report on progress

Strengthen: Reporting at metropolitan scale

On a city, state and national level we have made global commitments for action that will contribute to managing and mitigating extreme weather in Sydney. Actions to meet commitments such as the Paris Climate Agreement must begin with an understanding of our current emissions across metropolitan Sydney. Individual councils have previously reported emissions, however fragmented governance across the city has made metropolitan data collection, reporting and action inconsistent.

This action will pioneer a standardised metropolitan-wide process for measuring and reporting on carbon emissions in Sydney. This science-based approach will support decision making for action at the scale we need. The opportunities for reducing emissions are different across the city. This process will support councils and communities to better understand how they can act, now.

A network of councils will draw on data from the Greater Sydney Commission and expertise from the international C40 Cities program and the City of Sydney. The gaphill develop protocals, monitor, evaluate, repair and take action to monitor, evaluate, report and take action.

Aligned actions

ACTION 14

Support a more flexible and resilient water cycle

Strengthen: Advocacy for statutory policy

The Metropolitan Water Plan (2017), highlighted the need to diversify Sydney's water cycle management to secure a liveable, growing and resilient Greater Sydney. Use of technologies such as water recycling of wastewater and stormwater are currently stifled by market settings and short term policies. A secure, flexible and resilient water supply is essential to manage the combined stresses of the combined stresses of ageing infrastructure, growth, inequity and future shock events from extreme weather, such as droughts and heatwaves.

More diverse water supplies are being achieved in other cities through long term policy with targets. This action will focus on securing agreement across government, business, market regulators and the community on practical policy and market settings. This will secure water over a 20-40 year period, aligned to population growth and the Greater Sydney Region Plan and enable stable investment and implementation of a range of water technologies.

ACTION 15

Reduce reliance on liquid fuel

Initiate: Resilience Challenge event

Sydney relies on overseas imports for 90% of our liquid fuel supply. This means we are significantly exposed to supply-chain disruptions. The functionality of our city depends on diversifying our fuel sources and increasing self-sufficiency.

This action seeks leadership and collaboration to develop a metropolitan plan to reduce the risks to our current mobility, whilst planning for new ways of powering transport technology in the future. Practical policy and market settings will be required for a 20-40 year period, aligned to population growth and the Greater Sydney Region Plan. A 'City Resilience Challenge' event will bring together organisations to research potential targets and policy for investment in more diverse transport options.

Left Port Botany

DIRECTION 3

Connect for strength

Resilience challenge: Declining social cohesion

Our communities are diverse and cohesive, but intolerance and inequity is growing.

We are a fast growing city with high levels of cultural diversity. Social cohesion has traditionally been high in Australian society, defined as the presence or absence of social trust and cooperation between citizens[20]. However, social cohesion between our different communities is decreasing, and social isolation is increasing. This undermines the vital connections we need to live well as well as how we respond together in a shock event.

Sydney today is home to Australia's largest population of Aboriginal and Torres Strait Islander peoples. We are also amongst the most culturally diverse cities on earth – 39% of us were born overseas and around 32% speak a language other than English at home.

Some parts of Sydney are extremely culturally diverse, while others are made up of communities where almost everyone has been settled in Australia for generations[21].The extent to which we meet people from different cultural backgrounds depends largely on where we live and work. A lack of transport options inhibits our ability to visit different communities that have different cultural backgrounds.

Tolerance of cultural diversity is declining in Sydney.[22,23] Attitudes to cultural diversity are complicated and depend on many factors, but there is evidence that over time contact with different cultural groups decreases racism, and there very little increase in positive attitudes amongst those who live in areas of low diversity[24].

Cultural diversity

- We are more culturally diverse than London, Singapore and New York on the basis of number of people born elsewhere[25].
- Around 38% of Sydney households speak a language other than English at home[26].

Fragmentation

- In Parramatta 76% of people were born overseas, and twice as many people speak a language other than English at home than the national average[30].
- The ability to move around Sydney and interact with different cultural groups can be difficult due to poor transport links in areas with concentrations of different cultural groups[31].

Intolerance

- 54% of people in Sydney disagree with the statement 'the government should assist with ethnic minorities', compared with 44% of people from Melbourne[27].
- 25-27% of Sydneysiders expressed negative or strong negative attitudes towards Muslims, compared to 16% of people surveyed in Melbourne[28].
- Further research has found Muslim, Aboriginal and Torres Strait Islander and African people experience high levels of discrimination. 77% of South Sudanese people surveyed reported experiencing discrimination[29].

[20] Larsen 2014, published by the UN. Social cohesion: Definition, measurement and developments. Christian Albrekt Larsen, Professor, Centre for Comparative Welfare Studies (www.ccws.dk), Aalborg University, Denmark
[21] SBS, 2016, How Diverse is My Suburb?
[22] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015
[23] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015
[24] Forrest and Dunn, 2010, Attitudes to Multicultural Values in Diverse Spaces in Australia's Immigrant Cities, Sydney and Melbourne
[25] Resilient Sydney, 2016, City Context Report
[26] Australian Bureau of Statistics, 2016. Greater Sydney Community Profile
[27] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015
[28] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015

Connect for strength objective

Every Sydneysider will feel they belong in our community, and our city.

Our community have expressed concerns about declining social cohesion. They have asked for action to ensure the diversity of our people and the strength of local connections is valued to maintain a cohesive, inclusive and prosperous metropolitan city.

This is supported by studies that show close knit, cohesive communities are better prepared for shocks and respond and recover faster than those where there is tension.

Consultation also highlighted the importance of acknowledging, embracing and learning from Aboriginal and Torres Strait Islander peoples, the world's oldest continuous living culture.

Finally, building opportunities for economic and civic participation for all our communities is critical for ensuring everyone is able to prosper and thrive across our city.

As we take action to improve social cohesion and inclusion, we will be guided by the following principles:

A welcoming city:

We will measure and prioritise social cohesion across our metropolitan city as an important factor to our ability to respond and recover from disasters. We will build opportunities for communities to connect across metropolitan Sydney, and actions to promote safety and tolerance in everyday interactions.

Resilient Cultures:

We will acknowledge and embrace Aboriginal and Torres Strait Islander peoples and cultures in our city's past, present and future.

Inclusion and participation:

We will create opportunities for all our cultural communities to participate in leadership positions in our organisations to ensure everyone in our city can thrive and prosper. This will include engaging in ongoing dialogue about racial equity and identity.

This direction aligns to:

Previous page Green Square: Young Aboriginal and Torres Strait Islander girls performing traditional ceremony. Photo: Katherine Griffiths
Icons UN Sustainable Development Goals

11 33

Flagship action: City cohesion and wellbeing

ACTION 16

Monitor metropolitan social cohesion and wellbeing

Strengthen: Research to begin 2019

A well connected and cohesive city responds better to major shocks and can work together to manage stresses. The measurement, monitoring and understanding of social cohesion and levels of tolerance and wellbeing across our metropolitan city has been fragmented and inconsistent. A coordinated approach is required to improve our understanding of how to most effectively and efficiently support and invest in community cohesion.

This action will connect practitioners across government, business, social services and the community to share the range of wellbeing indicators already being used by councils such as the City of Sydney and Parramatta, and State government agencies across Sydney. These include metrics such as level of community connectedness, networks, or close personal relationships and measures of trust. This action will identify and convene a 'community of interest' of organisations with expertise and data, including those with experience of measuring household financial wellbeing. They are:

- Identifying existing data and gaps;
- Developing a collaborative structure and process for working together;
- Exploring how collaborative reporting responsibility could be managed;
- Commissioning research to understand global best practice;
- Co-designing frameworks, measures, tools and reporting protocols.

Understanding and tracking cohesion and wellbeing will enable evaluation of current programs and evidence-based decision making for our future. This action will inform the effectiveness of other strategy actions and enable measurement of wider city resilience in Sydney.

Resilience value

This action will increase awareness of social cohesion and community wellbeing and build awareness of risks. It will build capacity for integrated, adaptive, evidence-based decision making that improves social cohesion. Collaboration between diverse stakeholders will build capacity for stable governance.

Facilitator

Resilient Sydney
Great Sydney Commission

Potential collaborators

City of Parramatta, City of Sydney, Institute of Sustainable Futures – UTS, NSW Mental Health Commission, Multicultural NSW, Resilient Sydney, University of Western Sydney

Milestones

Standards for city-wide local monitoring and reporting of social cohesion, aligned to the longitudinal Scanlon Foundation annual survey of capital cities.

Left Campbelltown: Resilience workshop.
Photo: Damiam Shaw

Supporting action

ACTION 17

Learning from First Nations Elders and community leaders – experts in resilience and survival

Strengthen: Stage 1 engagement complete 2018, report to be shared

Sydney is home to the largest population of Aboriginal and Torres Strait Islander peoples in Australia. The major shock event of colonisation impacted these communities and has created ongoing experiences of stresses around racism, child removal, inequity and displacement. Aboriginal and Torres Strait Islander peoples are experts in long term resilience and intergenerational survival that must inform Sydney's ongoing understanding and actions for resilience.

In 2017, Resilient Sydney engaged a First Nations engagement consultancy to consult with Aboriginal and Torres Strait Islander Elders and community leaders. Consultation focused on understanding and valuing the qualities of Aboriginal and Torres Strait Islander peoples that have enabled them to survive, adapt and thrive as the world's longest continuous living cultures, some potential actions and the processes for co-designing actions in future.

They identified the following qualities as critical to survival:

- connections to family, community, culture and country
- sharing – helping anyone who needs it, even if you don't have much yourself
- a strong work ethic, innovation, self-sufficiency and the ability to 'just get on with it'
- identity – a strong cultural and community identity with Elders imparting cultural information, modelling strength and resilience and quietly taking care of those in need.

Elders and community leaders identified a strong need for visibility of Aboriginal and Torres Strait Islander peoples and cultures within the broader Sydney community, as well as an understanding of First Nations peoples' contributions to our city. They emphasised a core need for respect, recognition and 'truth telling' in moving forward.

Existing consultative bodies such as Aboriginal and Torres Strait Islander community advisory panels working with councils, key Aboriginal organisations and grassroots forums with Elders and young people were identified as the best ways to engage and develop our actions. It will be important these are broad and representative, seeking a diversity of views within the community and focusing on co-creation and implementation of actions.

The next steps for Resilient Sydney are:

- sharing the outcomes with stakeholders and organisations across metropolitan Sydney
- highlighting findings to the global 100 Resilient Cities network
- working with Aboriginal and Torres Strait Islander people in co-creation and decision making to develop the actions.

Resilience value

This action will increase visibility and awareness across metropolitan Sydney to value the contributions and adaptive leadership of First Nations peoples, whilst developing initiatives to address inequity and promote inclusive, integrated decision making.

Facilitators

Resilient Sydney working with existing Aboriginal and Torres Strait Islander community consultative bodies

Collaborators

Community –Aboriginal and Torres Strait Islander Elders, community leaders, representatives and young people with a geographic representation across Sydney

Aligned action

ACTION 18

Support communities to know their neighbours

Amplify: Community information

Consultation has highlighted the need for greater community connections to build tolerance and cohesion, reduce social isolation and increase safety in times of crisis.

This action seeks to amplify current initiatives provided by business, government or the community sector with a proven record for increasing connections. We will encourage participation by individuals and organisations across metropolitan Sydney. Initiatives include the following:

- Good Hoods – an IAG initiative to connect communities so they are 'ready for anything' through initiatives such as weekly neighbourhood barbecues, creating local community safety groups, volunteering and sharing skills or training
- Joining-the-dots – connecting newly arrived residents with established Australians over 'Welcome Dinners'
- Neighbour Day – an annual celebration of community where people connect with their neighbours over coffee, picnics, barbeques and events, held in March each year.

"It's easier to go. And it's harder to stay. Because if you stay [in the community] you have got to do something."

Aboriginal Elder of metropolitan Sydney

Left Sydney: community artwork. Photo:Joseph Mayers

Aligned actions

ACTION 19

Encourage cross-city visitation and understanding

Strengthen: Advocacy for wider promotion

Studies have shown increasing interactions between different cultural communities can contribute to improving tolerance and respect. Our community was concerned about the lack of interaction of communities in different parts of Sydney. This action asks community groups and organisations running cultural festivals and activities to create campaigns and promotions that specifically target communities in other parts of metropolitan Sydney. This will encourage people to experience different cultures in parts of Sydney they might not normally visit.

ACTION 20

Promote safety and tolerance in everyday interactions

Amplify: Advocacy for wider promotion

This action responds to concerns about intolerance of cultural diversity. The action will engage organisations to promote initiatives to residents and employees that enable understanding of the experiences of people of different cultural communities.

This includes the following two initiatives:

- an immersive game/education app called Challenging Racism, challenging participants to spend a week 'walking in the shoes' of a Muslim woman, Aboriginal man or Indian student. They receive texts, tweets, images and videos that challenge assumptions and highlight the importance of bystander action against racism
- promote the outcomes of two metropolitan Sydney councils who allowed teams to 'swap' locations, other schools, councils and organisations will be encouraged to swap and spend time participating in work, education and/or social activities in another part of Sydney.

"The strength of Parramatta is the diversity of the culture and the accessibility of the local area, the shops, different kind of shops, people from different walks of life. You tend to meet different cultures and you learn from different people."

Mansour Elias, resident of Merrylands

Left Parramatta. Photo:Sarah Rhodes

Aligned actions

ACTION 21

Promote broad adoption of Welcome to Country protocols

Strengthen: Advocacy for use of protocols

This action was developed by a member of the Aboriginal and Torres Strait Islander community during consultation, and highlighted as important for increasing visibility and respect by Aboriginal and Torres Strait Islander Elders and community leaders.

This action more organisations, households and public events to publicly acknowledge the place of Aboriginal and Torres Strait Islander peoples in metropolitan Sydney on a routine basis. Reconciliation Australia[1] defines Welcome to Country and Acknowledgement of Country protocol, shown in the box below.

Acknowledging country, people, language and culture is a simple and important step to express cultural respect and understanding. Welcome to Country and Acknowledgement of Country ceremonies could be extended to visitors as they arrive in Sydney, such as cruise ship terminals, Central train station, in clubs, local sporting events, community get-togethers and in our homes. This work has begun at Sydney's airport as part of their Reconciliation Action Plan.

ACTION 22

Support diversity in leadership

Strengthen: Advocacy for organisational policy

The mix of people in key city institutions and leadership positions does not represent or reflect the variety of people and cultural groups in our city population. Better inclusion will reduce cultural bias and improve opportunities for participation in employment for different cultural groups, and increase productivity for our city.

This action asks organisations to support and promote diversity. Efforts can focus on providing civic leadership opportunities for people from Culturally and Linguistically Diverse (CALD) groups, and organisational change in the recruitment and retention of employees.

The Welcome to Country and Acknowledgement of Country protocol, from Reconciliation Australia:

"Protocols for welcoming visitors to Country have been a part of Aboriginal and Torres Strait Islander cultures for thousands of years. Despite the absence of fences or visible borders, Aboriginal and Torres Strait Islander groups had clear boundaries separating their Country from that of other groups. Crossing into another group's Country required a request for permission to enter. When permission was granted the hosting group would welcome the visitors, offering them safe passage and protection of their spiritual being during the journey. While visitors were provided with a safe passage, they also had to respect the protocols and rules of the land owner group while on their Country. … the essential elements of welcoming visitors and offering safe passage remain in place. A Welcome to Country occurs at the beginning of a formal event and can take many forms including singing, dancing, smoking ceremonies or a speech in traditional language or English. A Welcome to Country is delivered by Traditional Owners, or Aboriginal and Torres Strait Islander people who have been given permission from Traditional Owners, to welcome visitors to their Country. An Acknowledgement of Country is an opportunity for anyone to show respect for Traditional Owners and the continuing connection of Aboriginal and Torres Strait Islander peoples to Country. It can be given by both non-Indigenous people and Aboriginal and Torres Strait Islander people."

[1] Reconciliation Australia, accessed 11/01/2018 www.reconciliation.org.au/wp-content/uploads/2017/11/Welcome-to-and-Acknowledgement-of-Country.pdf page 1.

DIRECTION 4

Get ready

Resilience challenge: Lack of understanding of risks and interdependencies

Like people everywhere, Sydneysiders rely on infrastructure and essential services that provide our food, energy and water, telecommunications, transport, and manage our waste[34]. They are owned and managed by a patchwork of different organisations, both government and private businesses. All these assets and services are intricately connected and disruptions can have knock-on effects with serious impacts across city systems. As these systems become more complex, it is crucial each organisation understands their connections and roles in managing risks.

The Australian Business Roundtable for Disaster Resilience has highlighted private sector concern by clarifying the high economic and social costs of shock events that affect Australia and Sydney. Their studies have shown that in 2015 the cost of natural disasters to Australia was around $9 billion. It is estimated this will rise to $33 billion per year by 2050, with the actual figure likely to be much higher as this does not factor in the impacts of extreme heat, or climate change[35]. In Sydney, twenty-four hours of disruption to transport networks due to weather events could reduce GDP by $30 million, much of which could not be recovered through insurance[36]. Other social and community impacts of disasters in Sydney are not well understood.

The UN Sendai Framework for Disaster Risk Reduction highlights the urgent need for collective understanding, preparedness and action to secure a substantial reduction in loss of life and damage to livelihoods, property, economies and social structures from catastrophic disasters[37]. This is reflected on a national, state and local level via legislation, strategy and guidelines including the National Strategy for Disaster Resilience[38], the NSW State Emergency Plan[39], NSW Emergency Risk Management Framework[40] and Local Emergency Planning Guidelines[41].

The number of extreme weather events that require response services are increasing in our city. These events impact parts of our city differently, with some places particularly vulnerable to certain risks. As our city grows, we need more people and organisations to understand risks and engage in building resilience in their local area.

Connected city systems

- Almost every service we rely on every day needs electricity to function, especially internet and communications technology[42].
- Only 20% of Sydney's food comes from the Sydney basin[43]. That means 80% of our food comes from somewhere else, on trucks, trains, ships and planes which all need fuel.

People, organisations and planning

- Place based disaster planning of critical infrastructure is common in other countries.
- 89% of major businesses have business continuity/disaster recovery plans[44]

Community engagement and volunteering

- 18% of people over 15 years old in Sydney volunteer for an organisation or group[45]
- Less than 5 per cent of people in Australia are trained in first aid[46].

[34] NSW Office of Environment and Heritage, 2014, Towards a Resilient Sydney Urban Adaptation Research Synthesis
[35] Deloitte Access Economics and the Australian Business Roundtable for Disaster Resilience and Safer Communities, 2016, The Economic Cost of the Social Impact of Disasters
[36] SGS Economics and Planning and IAG, 2016. At what cost? Mapping where natural perils impact on economic growth and communities.
[37] http://www.unisdr.org/we/coordinate/sendai-framework
[38] https://www.ag.gov.au/EmergencyManagement/Emergency-Management-Australia/Documents/National-Strategy-for-Disaster-Resilience.pdf
[39] https://www.emergency.nsw.gov.au/Documents/publications/EMPLAN.pdf
[40] NSW Emergency Risk Management Framework (2017).
[41] https://www.emergency.nsw.gov.au/Documents/publications/guidelines/Guideline-Local-Emergency-Planning-2015.pdf
[42] NSW Office of Environment and Heritage, 2014, Towards a Resilient Sydney Urban Adaptation Research Synthesis
[43] www.sydneyfoodfutures.net
[44] 2015 ACSC Cyber Security Survey: Major Australian Businesses (2015). CERT

Get ready objective

We know how to manage risks to prepare, respond and recover

Global, federal, state and local strategy and legislation consistently highlights the need for a greater understanding of risk and collective responsibility for preparedness, response and recovery. Coordination across government, business and communities is identified as a key priority.

The NSW Government "Get Ready NSW" program encourages the community to be aware of risks and prepare for all hazards. This complements the extensive suite of community preparedness campaigns and initiatives being undertaken by NSW emergency service agencies across the Greater Sydney Region . Examples include

- NSW State Emergency Service Get Ready for Flood, Storm and Tsunami preparedness campaigns and local engagement activities including Community Action Teams
- NSW Rural Fire Service bushfire preparedness initiatives including Prepare, Act Survive campaign and Get Ready community engagement activities
- Fire and Rescue NSW Home Fire Safety preparedness

The business community have emphasised the need for investment in disaster resilience.

Our community have expressed serious concern about being unprepared for disasters. They have asked for actions to help them understand risks and increase preparedness while also facilitating local connections and building cohesion.

Organisations responsible for critical infrastructure and essential services need to understand their connections within city systems, the ways these systems react during disruption and their role in managing risks. This understanding should be supported by planning for infrastructure and assets that are diversified and capable of ensuring essential businesses and services continue running during shock events.

Finally we must build understanding of the specific vulnerabilities and risks we face in each of the different places in our city, and develop local action and capacity.

This direction addresses global, federal, state and local strategy and legislation, while responding to community and private sector concern. In understanding risks and preparing for disaster we will be guided by the following principles:

A prepared community

We will understand the community and social impacts of disasters across our city.

We will build the capacity of our community to understand and manage local risks while developing strong, cohesive neighbourhoods and districts.

Resilient Organisations

We will engage organisations to understand their connections and roles in managing risks across our city. This includes considering threats, hazards and disruptions as we plan, build and replace critical infrastructure and assets to reduce risks to life and property, and ensure our city continues to function during and after disasters.

Understanding risks and vulnerabilities

We will work together to build awareness of the specific vulnerabilities and risks we face in different parts of our city. We will build local capacity to manage and mitigate these vulnerabilities and risks.

This direction aligns to:

Previous page City streetscape. Photo: iStock/mihailomilovanovic
Icons UN Sendai Framework for Disaster Risk Reduction

Flagship action

ACTION 23

Get Prepared – 100,000 ready Sydneysiders

Strengthen: App launched 2018

Engagement revealed serious community concern over a lack of community preparedness for emergencies. The community were also aware of the need to strengthen local connections to ensure support and safety is close by during disasters. Strong, connected communities have the added benefit of increasing social cohesion across our city.

The number of households taking action to prepare in Sydney is unknown and effort is required to encourage take up and report results.

The Red Cross and IAG have co-created the Get Prepared app. The app is a free and easy to use, one-stop tool to help community members prepare for any type of emergency by:

- establishing a quick and easy network of support with three key contacts
- promoting review of the risks relevant to where they live
- providing checklists of actions to make an emergency plan
- saving the emergency plan as a PDF to be printed and shared with others.

The app builds on many years of work by governments and the Red Cross to help people prepare both physically and psychologically for disaster. It helps community members during emergencies by promoting connection to their relevant local emergency services orgnisation. It prompts them to prepare an emergency plan tailored to their needs.

Resilient Sydney will support the work with Sydney Councils, the Red Cross, IAG, the Australian Business Roundtable for Disaster Resilience and Safer Communities and partners to promote the app across Sydney and report on how it is used. We will develop a strategic campaign targeting government, business and community services. The campaign will promote the program to organisations to recruit their staff, customers and city residents to download the app and undertake preparedness activities.

Resilience value

This action will increase awareness and understanding of risks across diverse communities. It will promote integration and connections across networks of people in our city, whilst building safety and preparedness.

Facilitators

Australian Red Cross and IAG

Collaborators

Local government across metropolitan Sydney, business and community services organisations including the Australian Business Roundtable for Disaster Resilience and Safer Communities.

Milestones

Year 3: 100,000 Sydney residents have downloaded the app to undertake preparedness activities.

Left Blue Mountains: 100 Resilient Cities President Michael Berkowitz discussing bush fire damage with a resident. Photo: Damian Shaw

Supporting action

ACTION 24

Pilot disaster preparedness program for councils

Strengthen: Program began 2018

Local government plays a vital role in risk management and emergency prevention, preparedness, response and recovery. They connect local communities to other organisations and agencies in times of disruption, but they need support to integrate with critical infrastructure providers, run exercise scenarios and help our communities prepare.

The NSW Office of Emergency Management (OEM) has initiated a pilot Disaster Preparedness Program to build resilience across NSW. The program focuses on building awareness of disaster resilience issues and responsibilities through emergency risk assessments, emergency exercise planning and general emergency management training.

Resilient Sydney will work with the OEM to support the urban based pilot in the City of Sydney. OEM's Disaster Preparedness Project Officers will work with council forums, the Local Emergency Management Committee (LEMC), Office of Local Government and Resilient Sydney to clarify the needs of local council. They will review local capacity around business continuity resources, information sharing, understanding community capability and capacity and develop consistent best practice emergency risk assessment methodologies.

Resilience value

This action will build awareness of local risks. It will build capacity for integrated, adaptive decision making and action for councils, communities, businesses and other organisations across Sydney.

Facilitators

NSW Office of Emergency Management

Collaborators

City of Sydney, Emergency Service Organisations (ESO's), communities, private sector and other non-government organisations and Resilient Sydney, State Emergency Management Committee (SEMC)

Milestones

Program with actions running July 2018 - October 2020

Supporting action

ACTION 25

Mapping vulnerabilities at a District planning level

Initiate: Research from 2019

The shocks identified by Resilient Sydney threaten our entire metropolitan city, but their impacts vary depending on the diversity of the geography, communities and resources in each area. Increasing the capacity of our city to manage disasters involves understanding the specific risks and vulnerabilities facing each different part of Sydney and capturing those in the land use and strategic planning processes of government.

This action will address these concerns by mapping risks and vulnerabilities across a district of metropolitan Sydney in a pilot community vulnerability assessment process. The first step is collating digital mapping layers across agencies

This supports delivery of the Greater Sydney Region Plan direction for, 'A resilient city'. The need for a comprehensive understanding of local issues is recognised in the NSW Emergency Management Plan.

A multidisciplinary team will be created in the pilot area. The first step will be to share mapping data and determine a community vulnerability checklist for specific places in the city. Data from tools such 100 Resilient Cities' Assets and Risks tool will inform the potential for community impacts from disasters.

This process will enable reporting of community vulnerabilities that may be used when prioritising investment in disaster mitigation projects.

Resilience value

This action will build awareness and understanding of risks and vulnerabilities across Sydney. This will allow integrated, adaptive actions tailored to the diverse people, organisations and places across our city. This action is critical for good governance to prepare for, respond to and bounce back from shock events within Sydney.

Facilitators

NSW Office of Emergency Management, Resilient Sydney

Collaborators

Councils, Greater Sydney Commission Emergency Services agencies, Local Emergency Management Committees, NSW Office of Environment and Heritage, Infrastructure NSW. Transport for NSW, organisations responsible for critical infrastructure, services and assets, business and the community.

Milestones

Year 1-3: Vulnerability and risk mapping pilot in 2019, vulnerabilities assessment process documented for further delivery.

Aligned actions

ACTION 26

Develop a Critical Infrastructure Resilience Strategy

Initiate: Discussion Paper in 2017

We face increasing risks from shock events and our city systems are becoming more complex. There is a pressing need to ensure the critical infrastructure systems we rely on function effectively in the face of disruption, regardless of who owns or manages this infrastructure. This will help secure our social wellbeing, economic prosperity and environmental values for our city.

The NSW government has commenced the development of a Critical Infrastructure Resilience Strategy. The strategy is being developed under the NSW Emergency Management and Disaster Resilience Review (EMDRR), in conjunction with the NSW Emergency Risk Management Framework and the 2017 State Level Emergency Risk Assessment.

The strategy will ensure Sydney's critical infrastructure is able to:

- withstand shocks and continue to operate in shock events
- return to service as soon as possible after disruption
- respond to long-term stresses.

The NSW Office of Emergency Management has developed the NSW Critical Infrastructure Resilience Strategy Discussion Paper, 2017 and engaged with industry, local government and other stakeholders. The strategy will provide a definition of critical infrastructure along with proposed principles, actions and outcomes. This strategy offers a new place-based approach to integrated emergency management of the city systems that support the lives of five million people in Sydney.

The benefits of the strategy will include:

- enhanced resilience for critical infrastructure by recognising vulnerabilities and interdependencies. This will reduce service disruptions as well as the costs of asset ownership, maintenance and management
- enhanced emergency management arrangements for our communities
- stronger relationships between government, business and communities
- insurance premiums for critical infrastructure that consider the benefits of resilience, adaptation and mitigation investment.

Resilient Sydney will also promote the Strategy and work of the OEM throughout our networks.

Resilience value

This action will build awareness and understanding of risks and interdependencies as well as the benefits of investing in adaptation and mitigation. This action will also strengthen relationships and build adaptive capacity within communities and organisations across Sydney.

Facilitators

NSW Office of Emergency Management

Collaborators

Australian Business Roundtable for Disaster Resilience and Safer Communities, councils, Resilient Sydney and stakeholders including organisations responsible for critical infrastructure, services and assets, business and the community

Right Sydney: Flooding affects urban areas as well as waterways. Photo: Marccophoto

Aligned actions

ACTION 27

Evaluate the community impacts of disasters

Initiate: Research completed 2018

There is currently little information on how communities experience disasters beyond the costs of immediate insurance claims. This means the long term psychological, social and financial impacts borne by individuals and communities are unquantified and invisible. This makes the case for investment in mitigation difficult.

In 2017 Resilient Sydney partnered with the University of Sydney to undertake research with communities that have experienced recent shock events across metropolitan Sydney. The research is funded by the NSW Office of Emergency Management under the Community Resilience Innovation Program.

Focus groups with communities were completed in 2017 with the support of Sydney councils, and a report will be released in 2018 outlining key themes and outcomes. The report shares a series of policy recommendations for government organisations, businesses and communities to reduce the social and community borne costs of shock events.

"Systemic shocks and stresses affect all of us. That's why all the councils of metropolitan Sydney are working together on improving our resilience."

Beck Dawson, Chief Resilience Officer, Resilient Sydney

Aligned actions

ACTION 28

Support small businesses to manage cybersecurity

Amplify: Community information

Cybersecurity is one of the biggest shocks facing metropolitan Sydney and Australian businesses are underprepared. The economic impacts of cybercrime are significant and small businesses are particularly vulnerable.

In 2017, the NSW Small Business Commission partnered with counterparts in other states, and other government agencies to investigate and publish awareness and attitudes towards cybercrime across small to medium enterprises in Australia in the Cyber Aware National Report. The Commission also conducted a targeted study of NSW businesses. The Cyber Scare Report found that 93% of small and medium enterprises (SMEs) want access to risk management tools to help them protect their business from cyber crime. The Commission publish and promote recommendations for actions businesses can take to protect against cyber crime.

This action will promote small business engagement in cyber preparedness and act on the recommendations of the Commission through council networks, local business support programs and financial institutions and peak bodies with a significant client base of small to medium businesses.

"By working with all tiers of government and business, we look forward to creating a stronger, safer, more connected Sydney for everyone."

Lord Mayor of Sydney, Clover Moore

Aligned actions

ACTION 29

Help communities to train and volunteer to prepare for disasters

Strengthen: Community preparedness

Engagement revealed serious community concern over lack of preparedness for emergencies. The community was also aware of the need to strengthen local connections to ensure support and safety is close by during disasters. Training and volunteering are key ways of increasing preparedness, reducing anxiety and forging strong local connections.

This action highlights the excellent work of government, non-government organisations and business in providing certified and informal training and volunteering options. This information will be shared by councils. More people across Sydney will be encouraged to support their community in an emergency through:

- first aid training – for example, the Red Cross, St John's Ambulance, education and training institutions and private businesses
- volunteering before and during emergencies – NSW for example such as the State Emergency Service, Rural Fire Service, St John Ambulance as well as organisations such as the Red Cross, NSW Volunteer Rescue Association and Volunteering NSW
- volunteering to care for vulnerable people and pets for example – Volunteering Australia, community services organisations, charities, the Good Hoods program
- events that build capacity and increase awareness – such as Hawkesbury Council's Festival of the Flood, NSW State Emergency Service 'Get Ready for Flood', and NSW Rural Fire Service 'Get Ready Weekened'.

Strong, connected communities have the added benefit of increasing social cohesion across our city.

ACTION 30

Inform risks and ratings with open source data

Strengthen: Advocacy for open data

Communities lack awareness of the risks we face from extreme heat, bushfires, storms and floods. More transparently communicating these risks will improve awareness and lead to a reduction in property damage, risk to lives and call-outs for emergency services.

The first steps involve connecting all relevant agencies, businesses and organisations who currently have a role in understanding, managing and communicating these risks to explore data availability, methodologies for data sharing, reporting and risk assessment. There is an opportunity to establish consistent and integrated protocols for communicating risks.

Resilient Sydney will advocate for public availability of open data sets relevant to Sydney's shocks and stresses. More open data between business and government will support zoning, state planning policies, building regulations and insurance policies for at-risk parts of our city.

Left Sydney: scenario exercises provide experience to emergency services and volunteers

DIRECTION 5

One city

RESILIENT SYDNEY | 100 RESILIENT CITIES

Resilience challenge: Disjointed governance

Sydney is not governed as a single city. The three layers of government with jurisdiction over Sydney have overlapping responsibilities for supporting the economy, the environment and the communities of the city.

More than 100 government entities, agencies and departments have some level of policy or operational control. These organisations gather data, make decisions and undertake actions and investments that determine how our city systems function. However the people in these organisations are not in the same location, may not know each other, and often have differing priorities.

This is not optimal. Disjointed governance makes integrated decision making difficult, and impacts on people's experience of living in Sydney. It also makes it difficult to obtain a clear picture of the metropolitan scale risks facing our city, or where the responsibility for managing different risks rests between agencies, government or business.

Analysis shows an inability to coordinate decision making and action has at the very least exacerbated our challenges, and in some cases contributed to the risks we face. The experience of other major international cities shows the increasing scale of disasters and disruptions can overwhelm the capacity of governments to respond and new integrated approaches are required.

Operating Sydney

- There are over 100 organisations with some level of control in operating and managing key city systems that sustain our lives and economy in metropolitan Sydney. Sectors include government, water, electricity, transport, telecommunications, emergency services and food provision.
- Our metropolis has many state and local government organisations with varying size and capability. Councils in Sydney range in population size from 7,000 up to over 300,000.
- The NSW Government has 10 key government departments with some level of policy, budget and operational control of how Sydney works. There are many 100 state government agencies operating in Sydney.

[27] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015
[28] Markus, 2015, Mapping Social Cohesion, The Scanlon Foundation Surveys 2015
[29] Markus, 2016, Australians Today
[30] Western Sydney University, 2016, Centre for Western Sydney Data and Visualisations
[31] Resilient Sydney, 2016, City Context Report
[32] Aldrich, 2010, Fixing Recovery, Social Capital in Post-Crisis Recovery

"One City" objective

We are one city.

Action to address our challenges requires connected, collaborative leadership. All parts of Sydney – business, community, government, academia and the media – must work together.

This means adopting resilience thinking in organisations across diverse areas, from urban renewal planning and development, to transport, social infrastructure and service delivery, to climate change adaptation and emergency preparedness planning.

Resilience thinking involves understanding metropolitan scale interdependencies and risks, and our role in managing these risks, as well as committing to including the most impacted in our decision making. Above all it involves working with others across layers, areas of responsibility, business sectors and communities to share knowledge and take action.

In engaging people and organisations to build our resilience we will be guided by the following principles:

Increase leadership and governance for resilience

We will engage organisations to make a commitment to collective city leadership through collaboration for resilience thinking and action. We will learn from the collective experience and advice of elders from all of our different cultural and interest groups across metropolitan Sydney.

Share knowledge, create connections:

We will create digital platforms and opportunities for networking, sharing knowledge and collaborating across metropolitan Sydney.

We will continue to share and learn from other cities in the 100 Resilient Cities Network.

Build collaboration and measure change:

The Resilient Sydney Office will be maintained and supported as the structure that catalyses and enables collaboration and transformation in metropolitan Sydney.

As core to this role, the Resilient Sydney Office will also steer measurement and monitoring of transformation across our city.

This direction aligns to:

Previous page Sydney CBD: view to Western Sydney. Photo: iStock/mihailomilovanovic
Icons UN Sustainable Development Goals
Left City Resilience Framework in use at a workshop. Photo: Jamie Williams

ST PAULS BOOKS and GIFTS CENTRE
and CHAPEL OF ST MARY MACKILLOP
JB HI-FI

Flagship action

ACTION 31

Engage 100 organisations in the Sydney Resilience Commitment
Initiate: Program begins 2019

Lack of understanding of metropolitan scale risks and interdependencies, lack of people-centred decisions, and a tendency to operate in silos has both caused and exacerbated our challenges. Building our city's resilience requires purposeful, coordinated action.

The first step is building commitment. We invite all government, business, academic and community sector organisations in metropolitan Sydney to commit to supporting the implementation of this strategy by building their capacity to understand and manage vulnerabilities, interdependencies and risks for everyone in metropolitan Sydney.

By taking this commitment, organisations will ensure continuity and safety for their customers, employees and local communities during shock events. They will demonstrate innovation and market leadership, and improve the wellbeing and prosperity of our community.

A commitment means each organisation will:

- understand metropolitan scale community risks, as well as the 'local' place-based risks each organisation faces
- clarify the role of each organisation in managing and mitigating risks
- engage with the people in the city most impacted by your decision making
- engage in training and capacity building across each organisation
- collaborate to develop an action plan for your organisation
- undertake action and investment.

The Resilient Sydney Office will draw on research from groups such as the Resilient Expert Advisory Group (REAG), Organisational Resilience (New Zealand) and Risk Frontiers at Macquarie University who have all identified the need for organisations to better understand how potential shocks and stressed will impact their business and cities. The Resilient Sydney Office will begin implementation throughout 2018-19. A number of organisations and peak bodies have expressed willingness to make the commitment and promote it through their members and networks.

Resilience value

The commitment will be a vital step in increasing understanding across a diversity of sectors and organisations. The commitment will enable adaptive, integrated planning and action and is central to good governance to manage disruptions in our city.

Facilitators

Resilient Sydney Office, Committee for Sydney, Sydney Business Chambers

Collaborators

Australian Business Roundtable for Disaster Resilien, SYdney Business Chambersce and Safer Communities, councils, business groups, government and utility agencies and services, professional and peak bodies such as the Risk Management Association of Australasia (RMIA)

Milestones

100 organisations make a commitment to implement an action plan and investment by 2021

Left Parramatta: city streetscape. Photo: Sarah Rhodes

Supporting action

ACTION 32

Maintain and support the Resilient Sydney Office

Strengthen: Backbone office began 2015

Building resilience in our city will not happen by accident. A coordinated response that harnesses resilience thinking will require dedicated adaptive leadership. The Resilient Sydney Office has played that role to date in raising awareness of the challenges facing our city and the value of a resilience approach. The office has already successfully engaged and inspired organisations to take collective action, as evidenced in the activities in this strategy already underway.

This action involves ongoing maintenance and support of the Resilient Sydney Office as a metropolitan collaboration of councils, government, business and the community. The office will be guided by the Resilient Sydney Steering Committee. The office will build understanding, capacity and collaboration across all layers of government, business and the community to realise our vision for resilience in Sydney.

The Resilient Sydney Office will:

- advocate for coordinated understanding, governance, investment and action to address our challenges
- undertake research and engagement to support an understanding of resilience across metropolitan Sydney and work continue to develop this strategy and its actions
- undertake continuous learning to build the body of knowledge and practice around city resilience within metropolitan Sydney, Australia and with the other cities in the 100 Resilient Cities network
- create and maintain opportunities for networking, collaboration and innovation across metropolitan Sydney
- co-design a measurement, monitoring and evaluation framework and reporting process for this strategy.

The Resilient Sydney office will provide:

- research on metropolitan scale community risks
- templates and guidelines for identifying local risks, clarifying the role of participating organisations and setting an action plan
- training programs and best practice examples on governance structures
- mechanisms for networking
- a monitoring and evaluation framework and mechanisms for reporting.

Resilience value

This action will increase understanding, awareness and capacity, it will enable integrated, adaptive action and leadership, and promote good governance across a diversity of sectors within our city systems.

Facilitators

Resilient Sydney Steering Committee

Collaborators

All metropolitan councils

Milestones

Five year program, resilience strategy for Sydney and annual reporting of progress to 2020 initially.

Aligned actions

ACTION 33

Measure resilience and wellbeing to monitor and evaluate our goals

Initiate: Reporting for Sydney

Quantifying the benefits of taking action for resilience is key to understanding our capacity to make transformative change. Setting targets and monitoring change is essential for engaging major investors, governments and communities in understanding impact.

This strategy considers the United Nation's sustainable development goals. It also aligns to the UN Sendai Framework for disaster risk reduction, the Paris climate agreement and the 100 Resilient Cities City Resilience Framework. It provides a local framework of five directions that any organisation or individual can adopt and integrate into the planning and operation of their lives, their business or government policies.

The Resilient Sydney Office will use a collaborative impact approach to:

- monitor the implementation of all actions in the strategy
- ensure that evaluation is built into each action from the beginning
- produce an annual report of the first year after the publication of the strategy, reporting upon progress in its implementation
- work with stakeholders to determine the best method for confirming the baseline, medium and long term resilience of Sydney
- agree with the steering committee how we will evaluate the impact of the Resilient Sydney Office, to be included in the annual report.

This action will enable evidence based decision making, adaptive leadership and good governance for resilience in Sydney.

ACTION 34

Use digital collaboration and networking tools

Initiate: Digital tools

Connecting, sharing knowledge and collaborating has been difficult in Sydney due to the complexity of our governance structures, and the fact that we are not always geographically close to people we might need to work with.

This action involves Resilient Sydney with 100 Resilient Cities deploying a new online platform to enable stakeholders to connect, share information and build collaboration no matter where they are located in metropolitan Sydney. Participants will include stakeholders from government, business, academia, community services and the arts and community residents. The platform will enable stakeholders participating in the actions outlined here to connect.

The first step will be for the Resilient Sydney Office to procure a platform to meet our needs. We will test the platform with the Resilient Sydney Ambassadors and the Cross-City Transport Network.

ACTION 35

Learn and share with other cities through the 100 Resilient Cities network

Amplify: Sharing with other cities

Participation in the 100 Resilient Cities global network has been key for progressing resilience in metropolitan Sydney. The network provides opportunities to share information, explore diverse and innovative approaches to common problems and make connections with counterparts in cities across the world.

As a well-resourced city Sydney has much to contribute to the global community of practice within the network. There is much to learn from how other cities have tackled challenges similar to ours.

This action involves the Resilient Sydney Steering Committee and office continuing to play an active role within the 100 Resilient Cities network, developing community, business and government connections with other cities, in Australia and internationally. The Office will continue to provide a conduit to the network for stakeholders across metropolitan Sydney.

Implementing resilience in Sydney

RESILIENT SYDNEY | 100 RESILIENT CITIES

Implementing resilience

Improved resilience will occur in Sydney when our organisations and communities:

- understand community risks at both metropolitan and local scale
- know their role in managing and mitigating risks
- engage in training and capacity building
- collaborate with others to make decisions, and
- invest resources to take action.

This will mean adopting new behaviours and approaches to governance and leadership in Sydney. Organisations and decision makers are asked to apply the 100 Resilient Cities qualities and behaviours to their actions, programs, products, investments and policies. This will deliver people-centred and city-wide results.

City resilience commitment

We invite all government, business, academic and community sector organisations in metropolitan Sydney to pledge to build their capacity to understand and manage vulnerabilities, interdependencies and risks for everyone in metropolitan Sydney.

By taking this commitment, they will ensure continuity and safety for their customers, employees and local communities during shock events. They will demonstrate innovation and market leadership, and improve the wellbeing and prosperity of our community.

We invite you to get involved.

Commitment means each organisation will:

- investigate and understand metropolitan scale community risks, as well as the 'local' place-based risks organisations face
- engage with the people in the city, most impacted by organisational decisions
- clarify the role of each organisation in resilience of the city
- engage in training and capacity building across each organisation
- collaborate to develop an action plan for each organisation
- undertake action and investment.

Monitoring and evaluation

This Resilient Sydney strategy is consistent with the United Nation's sustainable development goals. It also aligns to the UN Sendai Framework for disaster risk reduction, the Paris climate agreement and the 100 Resilient Cities and Rockefeller Foundation's City Resilience Framework. It provides a local framework that any organisation or individual can adopt and integrate into the planning and operations of their lives, their business or government policies.

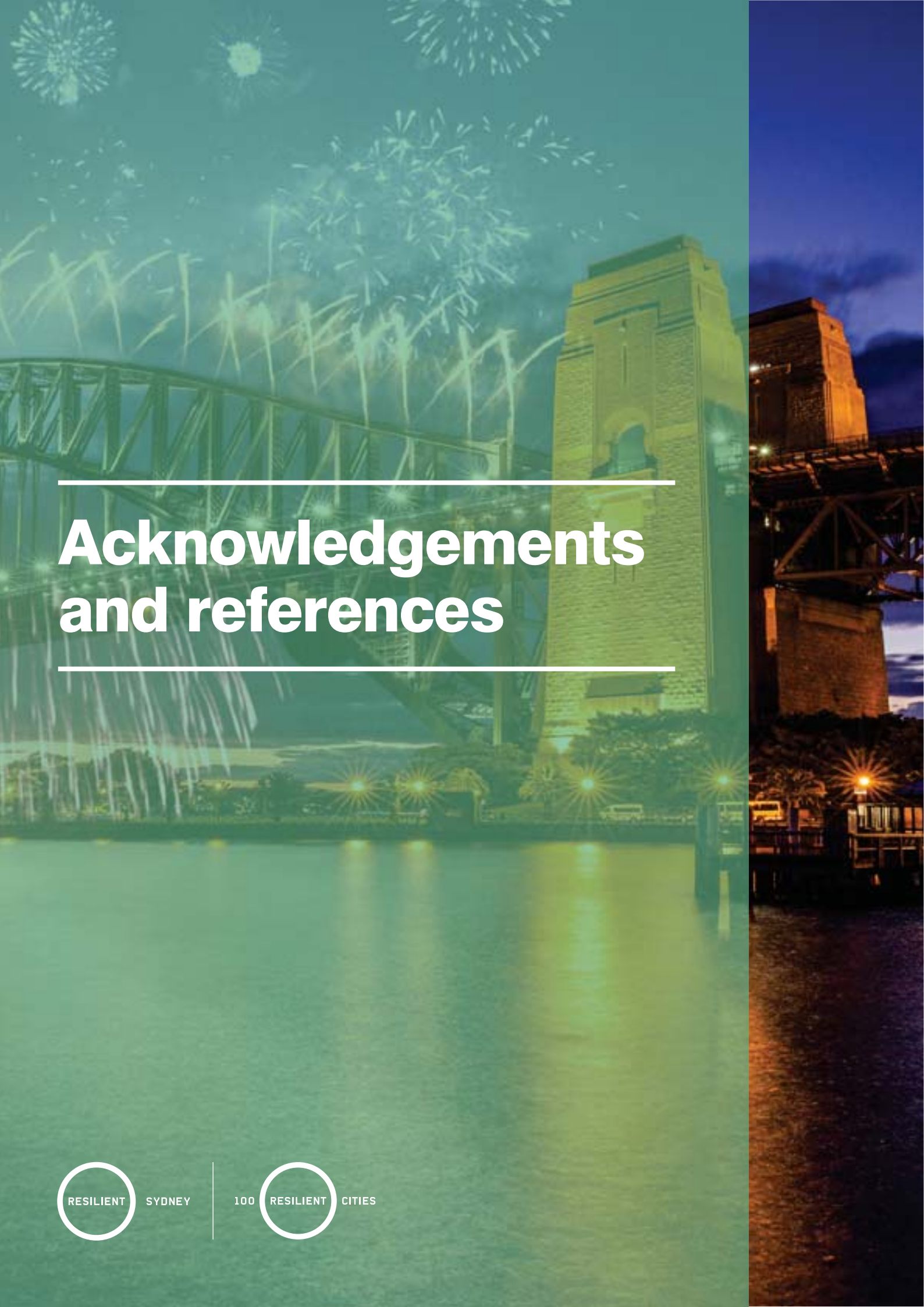
The Resilient Sydney office will work with people, academics and organisations across Sydney and the 100 Resilient Cities network to establish a process for measuring and evaluating our progress on resilience.

100 Resilient Cities has published research on the behaviours, qualities and principles that support resilience in actions, programs, products, investments and policies.

We commit to:

- monitor the implementation of all actions in the strategy
- ensure that evaluation is built into each action from the beginning
- produce an annual report of the first year after the publication of the strategy, reporting upon progress in its implementation
- work with stakeholders to determine the best method for confirming the baseline, medium and long term resilience of Sydney
- determine with our Steering Committee how we will evaluate the impact of the Resilient Sydney Office, and report this.

Previous page Alexandria: Ride2School Day. Photo:Katherine Griffiths
Left Campbelltown: Urban growth areas. Photo: Sarah Rhodes
Above Redfern: Resilient Sydney workshop



Acknowledgements and references

RESILIENT SYDNEY | 100 RESILIENT CITIES

Acknowledgements - It takes a city

Resilient Sydney is the result of several years of effort and collaboration across our city. The willingness to cooperate is impressive given the work occurred during a time of great political and governance change in our city. Resilient Sydney was made possible through the generous support of the Rockefeller Foundation and 100 Resilient Cities.

We especially acknowledge the active contributions from the councils of metropolitan Sydney, at every level. Mayors, Councillors, General Managers and CEOs continue to show leadership and interest in working together. The Resilience Ambassadors from each council have carefully guided and directed the development of this work, and worked together to build new relationships and opportunities for our city.

We thank all those residents of Sydney who made valuable contributions and shared their understanding of the city during engagement events and surveys. We look forward to continuing work with all of you as we implement actions for resilience in Sydney.

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Resilient Sydney Steering Committee 2016-2018

100 Resilient Cities: Associate Director Asia Pacific, Sam Kernaghan

Bayside Council: General Manager, Meredith Wallace

Campbelltown City Council: General Manager, Lindy Deitz

City of Sydney Council: CEO, Monica Barone

Deloitte Touche Tohmatsu: Managing Partner - Western Sydney, Danny Rezek

Greater Sydney Commission: Environment Commissioner, Rod Simpson

IAG: Group Executive, Jacki Johnson

Independent Ambassador, Robert Tickner AO

Northern Beaches Council: General Manager, Mark Ferguson (to early 2018)

NSW Office of Emergency Management: Executive Director, Feargus O'Connor

Parramatta City Council: General Manager, Greg Dyer (to early 2018)

Penrith City Council: General Manager, Alan Stoneham

Resilient Sydney: Chief Resilience Officer, Beck Dawson

Previous page New Years Eve in Sydney. Photo: iStock/Leo Patrizi
Right Western Sydney intersection. Photo: iStock/zetter

Councils and residents of Metropolitan Sydney

Bayside Council
Blacktown City Council
Blue Mountains City Council
Burwood Council
Camden Council
Campbelltown City Council
Canterbury-Bankstown Council
City of Canada Bay
City of Parramatta Council
City of Ryde
City of Sydney
Cumberland Council
Fairfield Council
Georges River Council
Hawkesbury City Council
Hornsby Council
Hunters Hill Council
Inner West Council
Ku-ring-gai Council
Lane Cove Council
Liverpool City Council
Mosman Council
Northern Beaches Council
North Sydney Council
Penrith City Council
Randwick City Council
Strathfield Council
Sutherland Shire Council
The Hills Council
Waverley Council
Willoughby Council
Woollahra Municipal Council
Wollondilly Shire Council

Former councils involved in the early stages, now amalgamated

Ashfield Council
Auburn Council
Bankstown City Council
Botany Bay Council
Canterbury City Council
Holroyd City Council
Hurstville City Council
Kogarah City Council
Leichhardt Municipal Council
Manly Council
Marrickville Council
Pittwater Council
Rockdale City Council
Warringah Council

Acknowledgements - It takes a city

Organisations engaged in the strategy development process 2015-2018

Participants from the below organisations gave their time and expertise through the engagement process of Resilient Sydney through interviews, workshops, surveys, sharing documents or providing advice.

100 Resilient Cities

202020 Vision

Adaptive Capability

AECOM

Australian Institute for Disaster Resilience (AIDR)

AIRAH

airbnb

All Together Now

AMP Capital

ANZ

Arcadis

Architectus

Art and Language Project

AMP

Atelier Ten

Ausgrid

Australand Holdings Ltd

Australian Business Roundtable for Disaster Resilience and Safer Communities

Australian Design Centre

Australian Government - Attorney General's Department

Australian Human Rights Commission

Australian Institute of Disaster Resilience (AIDR)

Australian Red Cross

Australian Science Media Centre

Australian Sustainable Built Environment Council (ASBEC)

Bicycle NSW

Big Picture Communications

Black Dog Institute

Blacktown Mt Druitt Hospital Expansion Project

Brookfield Multiplex

Buildings Alive

Built Environment, UNSW Australia

Business And National Government (BANG) resilience and business continuity networking group

C40

CarriageWorks

Catalysr

Chuffed

Climate Council

Climate KIC

ClimateWorks Australia

Colliers International

Committee for Sydney

Community Housing Ltd

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Data 61, CSIRO

Deloitte Australia

DEXUS Property Group

Dynamiq

EcoDistricts

Emergency Management Australia

Engineers Australia, Sydney Division

EY - Ernst & Young

Fire and Rescue NSW

Foundation for Young Australians

Frasers Property Australia

Future Cities Collaborative

Greater Sydney Commission

Green Building Council of Australia

Green Cross Australia - Business Adaptation Network

Greening Australia

Guwaali - Diversity, Inclusion, Reconciliation

Habitat for Humanity

Homelessness NSW

Human Rights Commission

Information and Cultural Exchange (ICE)

Infrastructure Australia

Infrastructure NSW

Infrastructure Sustainability Council of Australia (ISCA)

Inside Policy

Inspiring Australia

Institute for Sustainable Futures, UTS

Insurance Australia Group (IAG)

Investa

Investor Group on Climate Change (IGCC)

Janellis Australia

Jemena

JLL Australia

JOC Consulting

KJA Associates

KPMG

Lendlease

Local Government Association of NSW

Local Government Super

Microsoft

Mirvac

Mott MacDonald

Multicultural NSW

Munich Re

NAB

NBN

NCCARF - National Climate Change Adaptation Research Facility

Northern Sydney Regional Organisation of Councils (NSROC)

NSW Council of Social Service (NCOSS)

NSW Department of Aboriginal Affairs

NSW Department of Education

NSW Department of Family and Community Services

NSW Department of Finance

NSW Department of Justice

NSW Department of Planning and Environment

NSW Department of Premier and Cabinet

NSW Federation of Housing Associations

NSW Health and metropolitan Sydney Health Districts

NSW Office of Emergency Management

NSW Office of Environment and Heritage

NSW Office of Local Government

NSW Police Force

NSW Public Works

NSW Roads and Maritime Services (RMS)

NSW State Emergency Service (SES)

NSW State Property Authority

Office of the NSW Minister for Education

Office of the NSW Minister for Planning

Optus SingTel

Parramatta Artist Studios

Parramatta River Catchment Group

People, Place and Partnership

Premier's Council For Active Living NSW

Presync

Property Council of Australia

PwC Australia

Queensland Reconstruction Authority

Relationships Australia

Resilient Christchurch

Resilient Melbourne

Resilient Wellington

Responsible Investment Association Australasia

RICS Oceania

Risk Frontiers

Risk Management Institution of Australasia (RMIA)

Roberts Day

Rutnam Legal

Saatchi & Saatchi

SGS Economics & Planning Pty Ltd

Shelter NSW

Smart Cities Council of Australia and New Zealand

Southern Sydney Regional Organisation of Councils (SSROC)

St Vincent de Paul Society NSW

Stockland

StudioGL

Suncorp

Supply Chain Sustainability School

Sweeney Interpreting

Swiss Re

Sydney Airport

Sydney Alliance

Sydney Business Chamber

Sydney Coastal Councils Group

Sydney Opera House

Sydney Peri-Urban Network (SPUN)

Sydney Water Corporation

Telstra

The Fifth Estate

The GPT Group

The Smith Family

The Warren Centre for Advanced Engineering

Tigertail

Total Environment Centre

Transgrid

Transport for NSW

UN Global Compact

United Muslim Women's Association

United States Studies Centre, University of Sydney

University of New South Wales (UNSW)

University of Sydney

University of Technology Sydney (UTS)

Urban Growth NSW

Veolia

Virgin Airlines

Wadwell Initiatives

Wanaka Orchard

Western Sydney Regional Organisation of Councils (WSROC)

Western Sydney University (WSU)

Westpac Bicentennial Foundation

Westpac Group

Wollondilly Health Alliance

WWF Australia

Y-lab

Youth Action

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Above Circular Quay: Working groups of Resilient Sydney.
Photo: Katherine Griffiths

References

Page 36 – 37
History of Shocks in Sydney

The Sydney Morning Herald 2017 Flu season
http://www.smh.com.au/national/health/huge-delays-as-sydney-hospital-emergency-departments-swamped-with-patients-20170718-gxdnyu.html

BOM 2016-2017 summer was Sydney's hottest on record 2017
http://www.bom.gov.au/climate/current/season/nsw/archive/201702.sydney.shtml

Climate Council Australia's Angry Summer 2017
https://www.climatecouncil.org.au/angry-summer-report

The Blacktown Sun Emergency Department Admissions 2017
http://www.blacktownsun.com.au/story/4458994/sydney-to-be-hit-with-catastrophic-record-heatwave/?cs=1179)

The Daily Telegraph, 2017
http://www.dailytelegraph.com.au/city-chaos-as-mercury-hits-record-458c/news-story/5e8de66bfabd1f8e23e58ac40945a383

ABC Australian Bureau of Statistics census 2017 attack
http://www.abc.net.au/news/2017-03-08/census-chiefs-unprepared-for-website-crash-foi-documents-show/8333970

News.com.au Picton Extreme weather - flood 2016
http://www.news.com.au/national/communities-count-costs-in-lives-and-livelihoods-as-storm-cleanup-continues/news-story/03f2a9f16aa0f202fd5140ec305eeaf8

ABC Collaroy Extreme weather - storm 2016
http://www.abc.net.au/news/2016-06-16/engineers-waiting-for-collaroy-residents-to-have-houses-cleared/7516184

NSW Emergency Extreme weather - storm 2016
https://www.emergency.nsw.gov.au/media/280/1168/_/wg9q0qhbztl9gks48w/State+Recovery+Co-ordinators+Report+-+June+2016+East+Coast+Low.pdfABC Australian Bureau of Meteorology Cyber attack 2016
http://www.abc.net.au/news/2016-10-12/bureau-of-meteorology-bom-cyber-hacked-by-foreign-spies/7923770

ABC Kurnell Extreme weather - Storm and tornado 2016
http://www.abc.net.au/news/2016-12-17/kurnell-tornado-insurance-claims-disputed-one-year-on/8129570

Page 42
Metropolitan Sydney Today

Australian Bureau of Statistics 2016 Census Data
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/1GSYD?opendocument

Profile.id Greater Sydney community profile, 2017
http://profile.id.com.au/australia/birthplace?WebID=250

SBS Gini Coefficient 2017
http://www.sbs.com.au/yourlanguage/cantonese/en/audiotrack/global-finance-sydney-gini-coefficient-index-highest-all-states

Social Health Atlas of Australia, PHIDU Torrens University Australia, 2014-2015 data, published 2017
http://phidu.torrens.edu.au/

Sydney CBD Terror attack - lone gunman siege. Australian Reinsurance Pool Corporation (ARPC) reported business continuity losses were captured in 66 claims by businesses.
https://cdn.tspace.gov.au/uploads/sites/3/2017/09/ARPC_AR_2014-2015.pdf

The Conversation Blue Mountains Extreme weather – bushfire 2016
https://theconversation.com/bushfire-season-in-new-south-wales-grows-longer-and-stronger-33245

NSW Emergency Westmead Disease pandemic - swine flu (H1N1)
https://web.archive.org/web/20090708211927/http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/news-050709

The Sydney Morning Herald Sydney Harbour Infrastructure failure – boat accident 2017
http://www.smh.com.au/national/sydney-harbour-fatal-ferry-crash-boat-was-diverting-to-see-russell-crowes-home-20090518-b84y.html

The Sydney Morning Herald Parramatta CBD Financial institution failure - Global Financial Crisis (GFC) 2017
http://www.smh.com.au/nsw/parramattas-16b-facelift-ready-to-go-20110729-1i46x.html

Sydney/ Parramatta CBDs Financial institution failure - corporate collapse of HIH insurer
http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Publications_Archive/archive/hihinsurance

The Sydney Morning Herald Waterfall Infrastructure failure - train derailment 2007
http://www.smh.com.au/news/national/major-rail-accidents-in-australia/2007/06/05/1180809514121.html

The Conversation Warragamba Dam Disease pandemic – drinking water biohazard 2016
https://theconversation.com/cuts-to-waternsws-science-staff-will-put-sydneys-water-quality-at-risk-55313

The Sydney Morning Herald Botany Extreme weather – hailstorm 2015
http://www.smh.com.au/business/property/hail-storm-wreaks-havoc-to-sydney-warehouses-20150426-1mtgn1.html

Ribbons, Sue 2015 Floodplain Management Association National Conference Hawkesbury River, Windsor Extreme weather – flood
http://www.floodplainconference.com/papers2015/Sue%20Ribbons%20Full%20Paper.pdf

Page 64
Resilience challenge: Inequitable growth

Household debt http://www.smh.com.au/business/the-economy/wealth-is-up-but-abs-warns-more-than-400000-sydneysiders-are-overindebted-20170913-gygud6.html

Resilient Sydney, 2016, City Context Report

NSW Department of Planning and Environment, 2015, Metropolitan Sydney Factsheet

IPART, 2015, Review of Local Councils for Fit for the Future proposal
http://www.ipart.nsw.gov.au/files/sharedassets/website/shared_files/investigation_-_section_9_-_legislative_requirements_--review_of_local_council_fit_for_the_future_proposals/assessment_of_council_fit_for_the_future_proposals_-_appendix_c_-_council_assessments_-_october_2015.pdf

Sydney Morning Herald Sydney, Melbourne houses in world's top five most unaffordable: Demographia www.domain.com.au/news/sydney-melbourne-houses-in-worlds-top-five-most-unaffordable-demographia-20160125-gmd7x2/

News.com.au, 2016, Australian city has come in as second least affordable in housing survey http://www.news.com.au/finance/real-estate/buying/australian-city-has-come-in-as-second-least-affordable-in-housing-survey/news-story/ea303216600657c6afd91e30d3f8c0bc

City of Sydney, 2015, Housing Issues Paper http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0019/231328/150421_PDC_ITEM02_ATTACHMENTA.PDF

SGS Economics and Planning, 2015, Rental Affordability Index RAI Release Report, Community Sector Banking, Shelter Australia and SGS Economics and Planning, Nov 2015 http://www.sgsep.com.au/insights/rental-affordability-index/

Infrastructure Australia, 2013, State of Australian Cities report, 2013 http://infrastructureaustralia.gov.au/policy-publications/publications/State-of-Australian-Cities-2013.aspx

Infrastructure NSW, 2014, State Infrastructure Strategy Update http://www.infrastructure.nsw.gov.au/media/43622/inf_j14_871_sis_report_book_web_new.pdf

Sydney Morning Herald, Matt Wade 2016, NSW the State of Inequality When it Comes to Income http://www.smh.com.au/business/the-economy/nsw-the-state-of-inequality-when-it-comes-to-income-20160131-gmhz58.html#ixzz40rfT6AGo

SGS Economics and Planning, 2016, Effective Job Density http://www.sgsep.com.au/publications/effective-job-density-comparing-our-cities-and-regions

Western Sydney Regional Organisation of Councils (WSROC), Economy and Employment, accessed 25/01/17 wsroc.com.au/issues-campaigns/economy-and-employment

Western Sydney Regional Organisation of Councils (WSROC), 2016, Education http://wsroc.com.au/issues-campaigns/educaton

Western Sydney Regional Organisation of Councils (WSROC), 2013 WSROC response to DPI on The Broader WS Employment Area, August 2013 http://wsroc.com.au/component/k2/wsroc-response-to-dpi-on-the-broader-ws-employment-area-august-2013?Itemid=89

Western Sydney Regional Organisation of Councils (WSROC),, 2012, Comparative study of health services http://wsroc.com.au/media-a-resources/reports/send/3-reports/118-critical-condition-a-comparative-study-of-health-services-in-western-sydney-august-2012

Page 74
Resilience Challenge: Pressure on our health, the environment and economy

Resilient Sydney, 2016, City Context Report

CSIRO and BoM, 2015, Climate Change in Australia https://www.climatechangeinaustralia.gov.au/media/ccia/2.1.6/cms_page_media/168/CCIA_2015_NRM_TechnicalReport_WEB.pdf

NARCliM, 2016, Metropolitan Sydney Climate Change Snapshot http://www.climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region/Metro-Sydney-Climate-Change-Downloads

SMH, Lucky Cormack, 2016, Sydney Area an 'Urban Heat Island' Vulnerable to Extreme Temperatures http://www.smh.com.au/environment/sydney-area-an-urban-heat-island-vulnerable-to-extreme-temperatures-20160113-gm4v14.html

Dept of Planning 2013, Towards a resilient Sydney – Socio-economic profile http://www.sectorconnect.org.au/assets/pdf/resources/resourcepg/community/TRS_Socio-economic_profile_11_November_2013.pdf

Page 84
Resilience Challenge: Declining Social Cohesion

Scanlon Foundation 2015 Mapping Social Cohesion https://www.monash.edu/__data/assets/pdf_file/0007/356470/mapping-social-cohesion-national-report-2015.pdf

Scanlon Foundation, 2016, Australians Today http://scanlonfoundation.org.au/wp-content/uploads/2016/08/Australians-Today.pdf

SBS, 2016, How diverse is my suburb? http://www.sbs.com.au/news/interactive/how-diverse-is-my-suburb

Western Sydney University 2016, Centre for Western Sydney Data and Visualisations http://www.westernsydney.edu.au/cws/gws_research

Forrest and Dunn, 2010, Attitudes to Multicultural Values in Diverse Spaces in Australia's Immigrant Cities, Sydney and Melbourne

Page 94
Resilience Challenge: Lack of understanding of risks and interdependencies

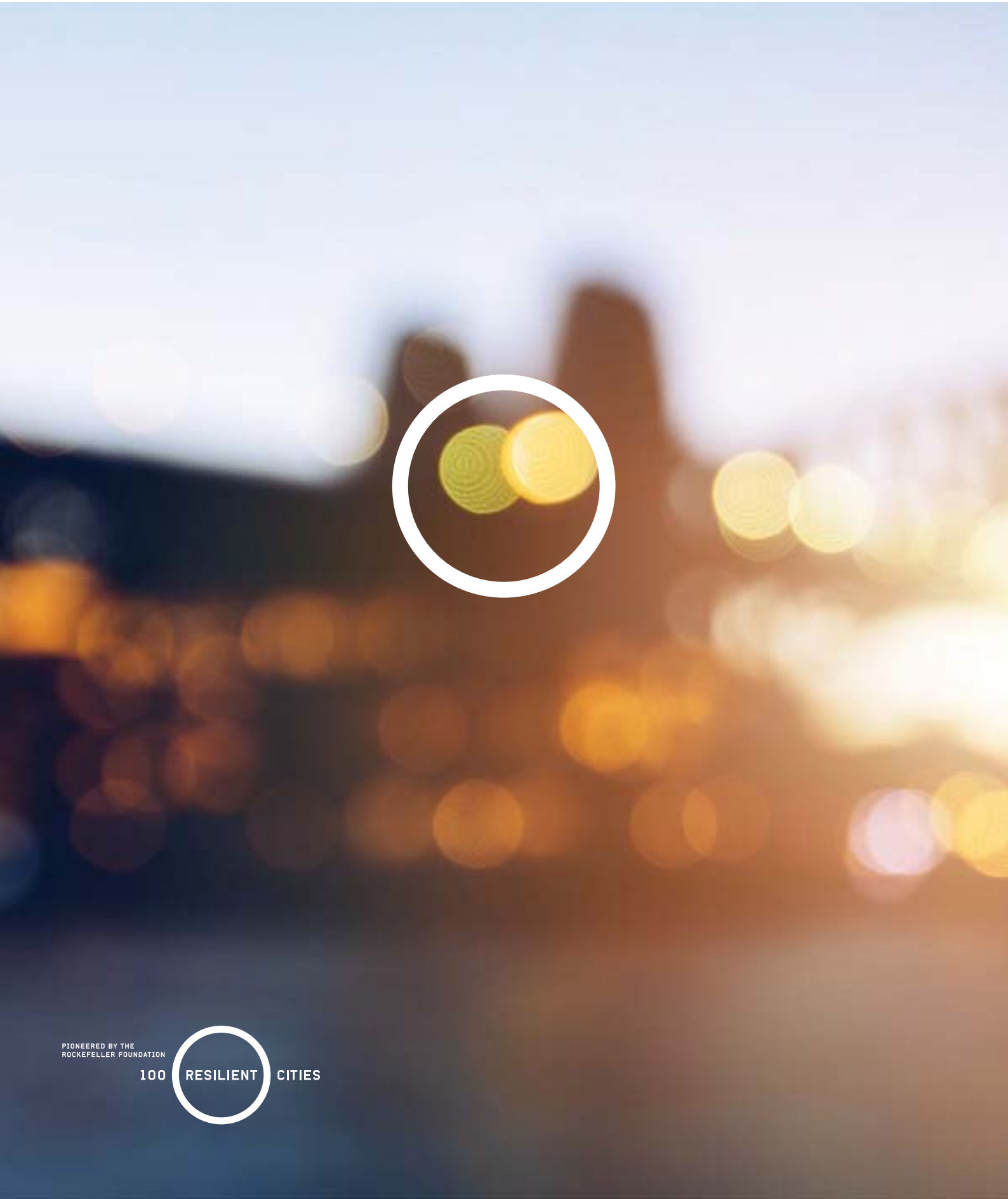
Resilient Sydney, 2016, City Context Report

NSW Office of Environment and Heritage (OEH), 2016, Towards a Resilient Sydney http://www.climatechange.environment.nsw.gov.au/Adapting-to-climate-change/Regional-vulnerability-and-assessment/Sydney

Institute for Sustainable Futures, 2015, Feeding Cities: Mapping Sydney's potential foodshed www.sydneyfoodfutures.net

ABC, 2014, How long could Australia survive if oil supplies dried up http://www.abc.net.au/7.30/content/2014/s4121593.htm

Australian Business Roundtable for Disaster Resilience and Safer Communities, 2013. Building our nation's resilience to natural disasters, Accessed on 22/02/16 on http://australianbusinessroundtable.com.au/assets/documents/White%20Paper%20Sections/DAE%20Roundtable%20Paper%20June%202013.pdf



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