

Benchmarking resilience

Organisational Resilience to Extreme Climatic Events

This project compares Sydney Water’s organisational resilience and practices with other water utilities to identify strengths and opportunities to further improve our ability to prepare and respond to future extreme climatic events.

Overview of project

Under Sydney Water’s Climate Change Adaptation Program we set a goal to understanding our existing organisational, operational and cultural resilience to identify how well placed we currently are to deal with the impact of extreme event disruptions (bushfires, storms, floods, heatwaves etc) and our ability to “bounce back”. As part of this Sydney Water commissioned a set of benchmark case studies aimed at comparing our current level of organisational resilience and practice with other water utilities. The purpose of this project was to identify strengths and opportunities to improve our ability to adapt to future extreme climatic events that are likely to be more frequent and intense in the future and might compromise the organisation’s ability to deliver its core services.

The key objectives of this project were to:

- Benchmark Sydney Water’s ability to cope with natural events
- Identify areas of improvement and recommend targeted actions to increase resilience to future extreme events
- Inform Sydney Water’s strategic approach to managing and planning for extreme natural hazard risks.

The utilities in this study were chosen based on their high reputation for resilience while covering a wide range of water company settings: large and small, urban and rural, with a range of ownership structures. They were also selected because they face a range of hazards, many with climate change implications. Table 1 provides a summary of the participating utilities.

Table 1: Water utilities participating in the resilience benchmark study

Water Utility name	Population served	Setting	Ownership
Sydney Water	4,000,000	Large city	State of NSW
Queensland Urban Utilities	1,300,000	Large city and small rural towns	5 Councils in South East Queensland
ActewAGL Water	360,000	Mid-sized city	ACT and private owner
Hunter Water	560,000	Mid-sized city and smaller towns	State of NSW
Gippsland Water	130,000	Rural and small towns	State of Victoria

Resilience

The definitions of resilience are many and varied, but there are some key elements that they have in common. The definitions speak of surviving disasters and returning to a new equilibrium, often requiring some form of adaptation. In this study resilience is defined as

“The ability to survive a crisis and thrive in a world of uncertainty”

In an increasingly volatile and uncertain world one of the greatest assets an organisation can have is the agility to survive unexpected crisis and to find opportunity to thrive in the face of uncertainty. Resilience can bring about greater optimism, adaptability and independence. It can lead to more innovative problem solving and faster recovery times, offering greater prospects of maintaining continuity of service in the face of extreme events. Resilience is important for any organisation, but for the water industry, as a provider of a critical lifeline service, the importance of continuity of service is even more crucial to the community's response and recovery.

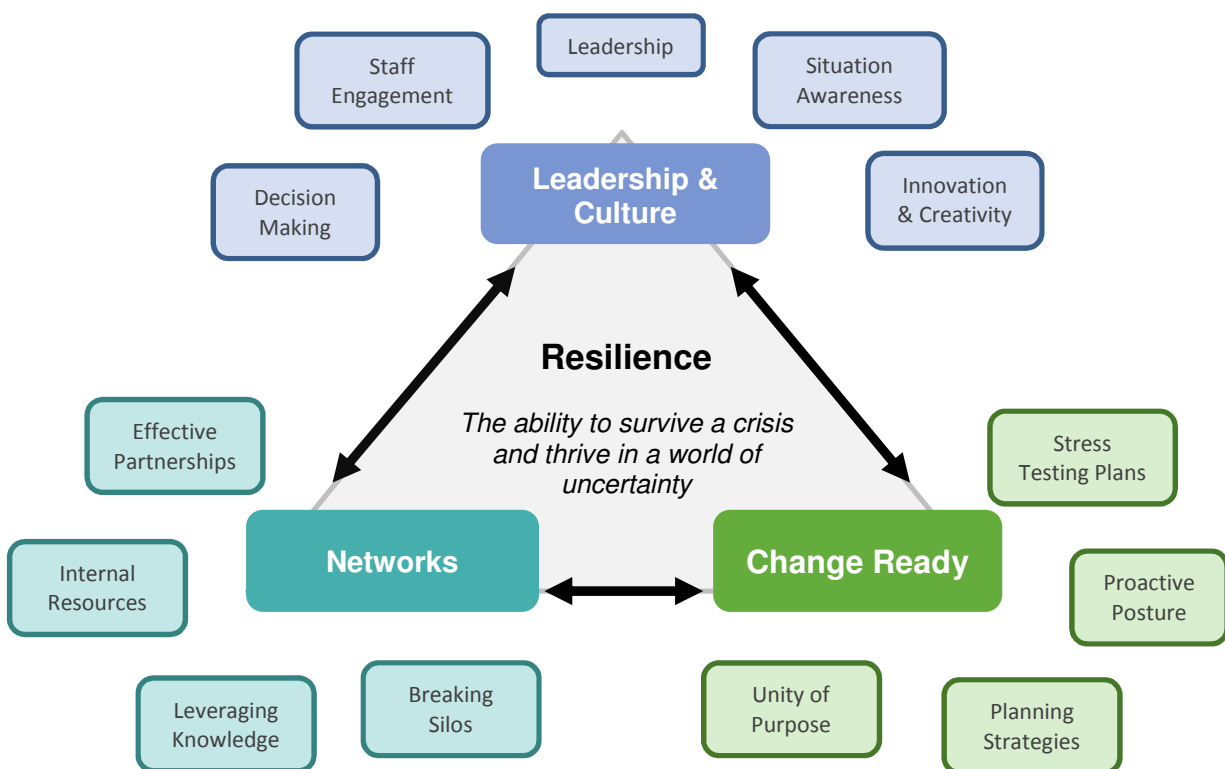
Water utilities are exposed to a range of hazards including flooding, bushfires, severe storms and contamination events. Participants in the resilience study were asked to rank the hazards they believed posed the greatest risk to their utility. The hazards are ranked for all five utilities based on an average ranking from all the participants of that utility (Table 2). It is obvious that these responses are influenced by the utilities' past experiences.

Table 2: Rank ordered hazards faced by participating water utilities

Hazard/threat	Avg Rank	Sydney	QUU	ActewAGL	Hunter	Gippsland
Loss of critical services: power, water, gas, communications	1	1	2	2	3	3
Drought (water shortage)	2	7	4	3	1	2
Flooding	3	5	1	7	2	4
Bushfires	4	2	11	1	7	1
Contamination	4	3	3	4	6	6
Severe weather	5	4	7	5	5	5
Severe storms	6	6	6	5	4	7
Staffing issues	7	9	4	9	9	12
Major accident or fire	8	10	11	8	11	8
Regulatory change	8	11	9	12	9	8
Reputation damage	9	8	8	10	12	14
Financial crisis	10	11	10	15	13	12
Failure of key supplier or customer	11	13	11	13	15	11
Terrorist threat	12	19	16	11	13	10
Pandemic/bio-security	13	13	15	14	15	15
Fraud	14	15	16	16	17	15
Earthquake	15	17	18	20	8	18
Landslides	16	16	18	16	19	15
Cyclones	17	19	14	19	17	18
Tsunami	18	18	18	20	19	18
Volcanic activity	18	19	18	18	19	18

The resilience model used in conducting this benchmark study was developed by ResOrgs¹ as an outcome from its research and incorporates work carried out by the Australian Attorney General’s Department. It consists of three attributes, Leadership and Culture, Networks and Change Ready. These three attributes are then composed of 13 Indicators that are used to forecast an organisation’s resilience in a number of key areas (fig 1).

Figure 1: The ResOrgs model for Organisational Resilience



While these indicators have been separated out, there is a lot of interdependency between the three attributes adding to the complexity of resilience, for instance organisations with a strong Proactive Posture will encourage new ideas, boosting Innovation and Creativity.

¹ Resilient Organisations (ResOrgs) <http://www.resorgs.org.nz/>

Results

Using the project definition of resilience the 5 water utilities were found to be:

- Reasonably strong in their ability to “survive a crisis”
- Less able in the area of “thriving in a world of uncertainty”.
- Strong on the emergency side but business as usual has more room for improvement.

Figure 2 shows how the five utilities were rated in each of the three attributes. None of the utilities were found to be outstanding in every area, showing that there is room for improvement for all the utilities.

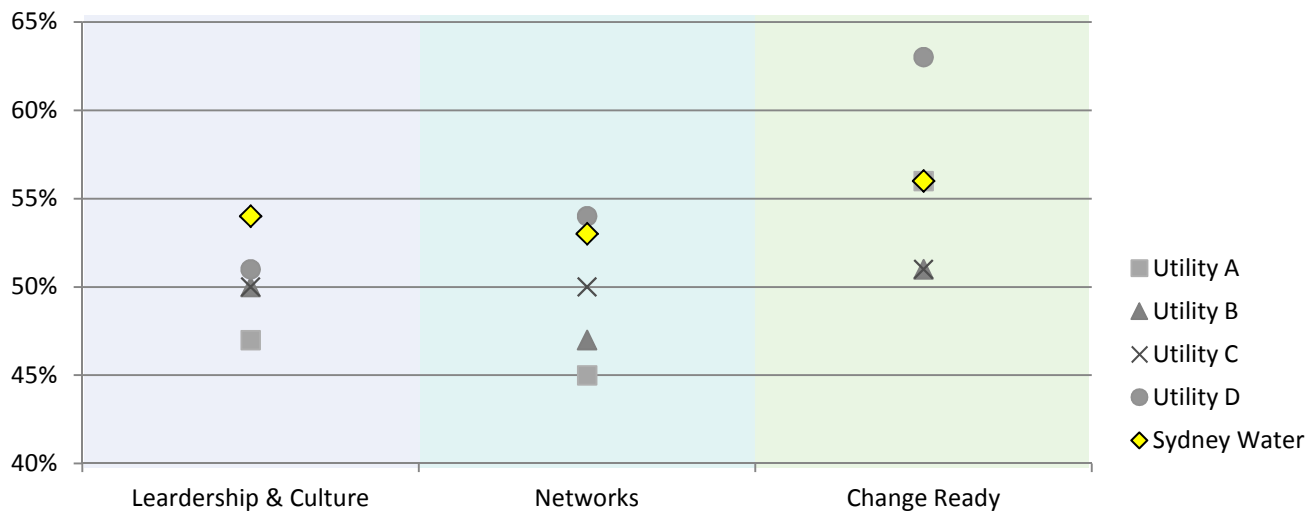


Figure 2: Comparison of 3 resilience attributes for the 5 water utilities

The differences between the utilities lies in the comparison of the 13 resilience indicators (fig 3). The indicators with the greatest similarity between the water utilities are mostly in the Leadership and Culture attribute: Leadership, Staff Engagement, Situation Awareness and Decision Making. The Breaking Silos indicator in the Networks attribute also reflected a small difference between the water utilities.

The largest differences were in Innovation and Creativity (Leadership and Culture attribute), Effective Partnerships (Networks attribute) and Planning Strategies (Change Ready attribute).

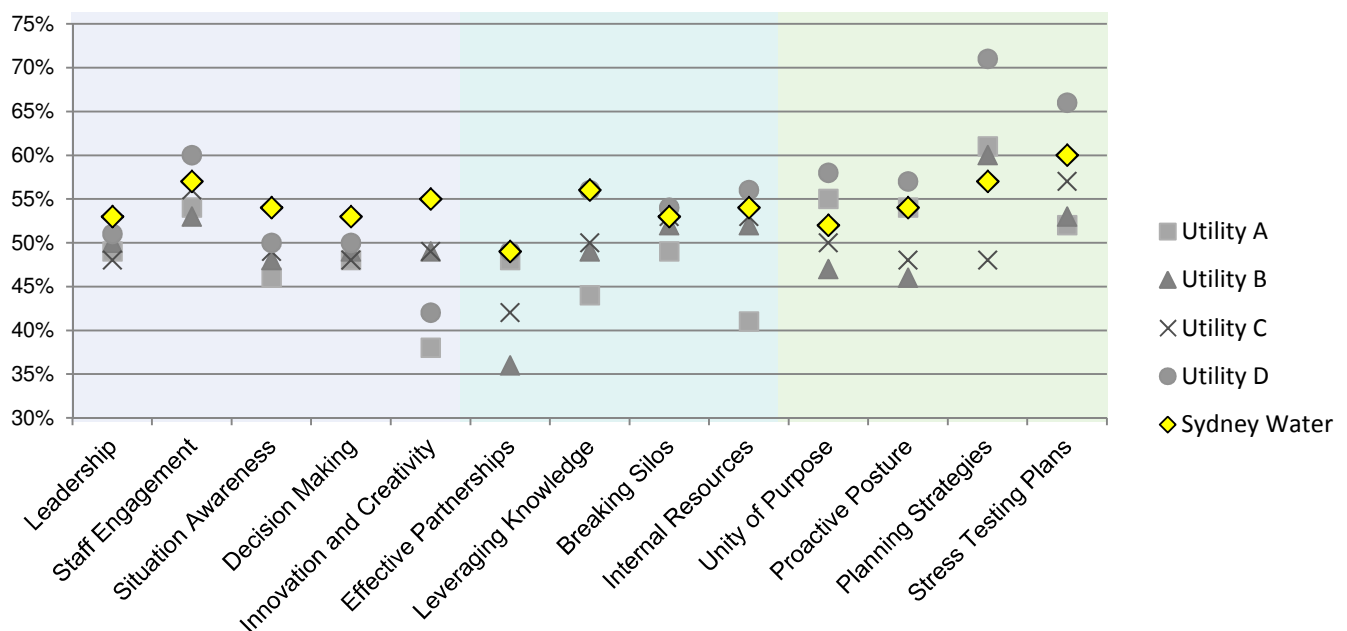


Figure 3: Comparison of 13 resilience indicators across the 5 water utilities

Sydney Water's Resilience

Sydney Water ranked in the top two of the five utilities assessed on the overall measure of organisational resilience. Sydney Water's results show a reasonably balanced level of resilience with Leadership & Culture, Networks and Change Ready attributes yielding similar overall scores. This relatively balanced result is also evident in the indicators, with no significant peaks or troughs in any one area. There are however, particular strengths and opportunities for improvement that run throughout the attributes.

Strengths

Overall the results show that Sydney Water's strength in terms of resilience lies largely in emergency response and planning. Sydney Water has strong emergency and risk management processes in place and good processes for debriefing exercises and emergencies and converting learnings to actions. The response of staff during an emergency is highly effective due to a strong "one-in-all-in" attitude. There are also robust communication processes during emergencies, for both dealing with the media and for communicating with networks during emergencies.

The study also highlighted Sydney Water's strong network of relationships and good mutual aid arrangements, good processes for designing redundancy into operational and IT assets, and high level environmental scanning and gaining a global strategic outlook.

Opportunities for improvement

The study shows that the strengths seen in Sydney Water's emergency processes, like the "one-in-all-in" cooperative attitude, are not always as evident in business as usual. Leadership and decision making across the organisation during business as usual is seen as risk averse and slow to respond with internal hierarchy and bureaucratic processes reinforcing a strongly siloed organisation.

The ability of the organisation to repurpose resources from one part of Sydney Water to another in an emergency is in place, however, the bureaucratic and siloed nature of business as usual may make this difficult to apply in a "slow burn" crisis.

In the emergency space Sydney Water's processes for spotting new red flags, dealing with unforeseen risks and cross organisational vulnerability analysis need strengthening. There also tends to be more of a focus on survival in exercising rather than on "finding the silver lining".

Concerns were also raised around the aging workforce and potential loss of in depth knowledge represented by the many long standing staff.

Recommendations

All of the water utilities have shown evidence of strengths and best practice, as well as areas that could be improved upon. An extensive list of best practice characteristics with potential to contribute to greater organisational resilience was drawn from the experience of the five utilities. The recommendations with the highest potential include:

Leadership and Culture

- Incorporate the existing strong emergency “one-in-all-in” culture into the business as usual setting by the executive mobilising latent leadership in all staff through a culture that is optimistic, communicative, high trust and with high empowerment.
- Use internal social media to support group problem solving and “co-creation” solutions.
- Develop a strong strategic capability to “find the silver lining” because this optimistic characteristic builds situation awareness, leveraging knowledge and proactive posture.

Networks

- Address critical skills issues of the ageing workforce through a program of strategically designed cross skilling, phased retirement, mentoring and effective graduate recruitment and retention schemes.
- Assign two roles for all staff: their business as usual team role and their emergency team role.
- Complement positive aspects of silos with strategically designed cross divisional job rotation, cross skilling and exercising.
- Develop an integrated knowledge management system incorporating IT systems such as SCADA, GIS, ERP and document management.

Change Ready

- Implement a process to quickly “stand up the Incident Management Team” so that this becomes part of business as usual, and that use of the incident control room is frequent producing a high level of skill, broadly shared.
- Develop strong “over the horizon” scanning.
- Implement a formal quality management program for continuous improvement in both business as usual and emergency settings.
- Include exercising with emergency services and key partners as an integral part of the regular exercising cycle.

Benefits

Implementing some or all of the recommendations would be expected to result in a greater overall organisational resilience. The benefits of being more resilient feed into Sydney Water's three corporate themes of Customer focus, Business excellence and Forward thinking contributing to our mission to put customers front of mind and contribute to liveable cities.

Some of the benefits to Sydney Water and our customers include:

- High quality customer service yielding an outstanding reputation with the community and greater political leverage
- Better solutions to complex problems with a higher level of buy-in by both staff and community
- A high response environment in which delegated authority and responsibility yield fast, effective action that is agile and efficient, within established cultural and operational norms in both emergency and business as usual settings by all staff
- Strong cross-organisational relationships, deep skill sets and a broad capacity to respond to the unexpected
- Much stronger internal and external working relationships, both formal and informal
- Much more effective and efficient operations including repair and recovery activities
- A more cohesive and unified organisation, resulting in high personal resilience and an "employer of first choice" status
- An effective solution to an ageing workforce combining the deep knowledge of longstanding staff with the high change appetite of younger staff
- A more innovative and creative organisation that finds the silver lining in both operational and strategic ways

The combination of these characteristics presents a picture of a significantly more resilient organisation, an organisation that is exceptionally able to survive unexpected crisis and thrive in world of uncertainty.

More information

Project contact

Jessica Sullivan - Project Manager Climate Change Adaptation