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# Emergency Services Workforce 2030

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## Acknowledgment of Country

We acknowledge the Traditional Owners of country throughout Australia and pay our respects to their Elders, past, present, and emerging.

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# EMERGENCY SERVICES 2030 – KEY MESSAGES

Eleven overarching and high-level implications of the trends and developments highlighted in this report are presented below. They are broadly divided into five system level implications and six organisational level implications.

These implications contain within them both challenges as well as significant opportunities to rethink ways of working and ways of supporting workers and workforces in the emergency services into the future.

## System-level implications

### A strong, shared vision for the future of emergency management will provide greater direction to strategic workforce planning.

1

Strategic workforce planning directly links the workforce to the future direction of an organisation. Having a strong, shared vision for the future of emergency management in Australia will provide greater direction to emergency service organisations for strategic workforce planning and workforce development. Such a vision would set out aspirations and expectations in areas such as technology and innovation, volunteering, indigenous knowledge and land management, and community participation. At the same time, however, planning will also need to account for multiple plausible futures and not just the future we expect or desire to see. This requires investment in, and capacity building for, scenario-planning and foresight to inform strategic planning pathways and adaption.

### Service delivery models are likely to be redesigned and increasingly tailored to fit diverse community and regional contexts.

2

The emergency management sector will need to look more closely at service delivery models that best fit different community and regional contexts. While much is said about ageing in rural Australia, another dominant trend in rural, regional, and remote areas is diversification. Multiple, locally-tailored service delivery models are likely to be needed to optimise workforce capacity in increasingly diverse and dynamic contexts, particularly with respect to volunteers and land managers. For example, combined fire and emergency service models may be needed in more rural communities in future, as these communities struggle with small and overcommitted volunteer bases. Direct involvement of local volunteers, stakeholders and communities in service re-design will likely be key and will increasingly be expected by governments and communities.

## 3

### The need to confront wider implications of climate change beyond natural hazard impacts will grow.

While the most visible and pressing impact of climate change for the emergency management sector is impacts on natural hazards and extreme weather, emergency service organisations will also need to look more and more towards addressing a wider array of climate change impacts. These include rising vulnerability in Australian society due to ever more interconnected and interdependent support systems, and the potential this creates for catastrophic and cascading disasters. They also include direct impacts on the health and wellbeing of the emergency service workforce through, for example, rising heat exposure, and fatigue due to longer fire seasons. There will be increasing pressure on emergency service organisations to focus on key areas like decision-making under conditions of uncertainty, sector-wide collaboration and strategic planning, community engagement, vulnerability assessment, and workload and fatigue management.

## 4

### Developing the workforce of the future means looking to build and attract skills, traits and capabilities in key emerging areas.

Public service delivery will experience major changes over coming years but the implications of the changes for the public sector workforce – including that of emergency service organisations – are unclear. What is clear, however, is that the mix of workforce traits, skills and capabilities most needed in future will shift, with growing importance of analytical, human and nontechnical (e.g., people management, decision making, and teamwork), collaborative, creative and critical skills. These skills will be in growing demand as public and government expectations of collaboration, coproduction, personalisation, and adaptive leadership in service delivery continue to rise. Emergency service organisations would do well to build their capacity to develop and attract these skills now, as there will be stiff and growing competition for workers with these skillsets into the future.

## 5

### Nurturing transformational, adaptive, and inclusive leadership styles and skills will be important for supporting workers through change.

Transformational, adaptive, and inclusive leadership are needed across all levels of the emergency management sector to support organisations to plan for the future workforce and bring workforces along with change. Transformational leadership helps workforces understand the ‘what’ and ‘why’ of change, focusing on communication, innovation and mission outcomes. Adaptive leadership is leading when new solutions need to be created. Inclusive leadership pays attention to people’s different needs and taps into diverse perspectives to improve organisational performance and workforce wellbeing. Notably, these forms of leadership have not been traditionally promoted and nurtured within emergency management.

## Organisational level implications

### Successfully responding to change means investing in building organisational resilience.

1

While the goal and language of 'community resilience' is strong in Australian emergency management, that of 'organisational resilience' is far less prominent. Yet, there is a need to invest more in developing organisational resilience for an increasingly disruptive and uncertain future. Organisational resilience involves building capacity to successfully respond to change and disruption, and thrive. It requires strong situational awareness, flexibility, and change readiness at both individual and organisational levels, supported by an organisational culture that encourages adaptability and ongoing improvement. Given the changing nature of work and increasing uncertainty, emergency service organisations need a workforce development approach that considers the dynamic nature of work and the equally dynamic potential of the workforce to reinvent itself, if enabled and supported to do so.

### Positive work design can enable workers to flourish and support positive mental health and wellbeing.

2

There is increasing awareness of the substantial role that work can play in shaping employees' mental wellbeing and illness, and the opportunities that work provides to allow workers to grow and thrive. When done well, changing the nature and organisation of workers' tasks, activities, relationships, and responsibilities can mitigate illness and promote meaningful, satisfying and engaging work. There is significant scope and opportunity to redesign voluntary and paid work in the emergency services in ways that supports this diverse workforce to flourish into the future. For example, work redesign can help to attract and retain mature workers in an ageing workforce, and to reduce burden and stress on workers in the face of rising expectations and growing demands under climate change.

### Balancing positive and negative impacts of professionalisation and managerialism on volunteers.

3

The voluntary sector in Australia has become more professionalised over time, with volunteers being treated more like paid employees through, for example, more professionalised volunteer management practices, and a greater focus on training. While this has brought improvements in safety and service quality, it has also led to unintended negative consequences for volunteers like increasing workloads and rising administrative and compliance burdens. Professionalisation is also often linked with managerialism (e.g., growing use of generic management practices, a focus on accountability and measurement, and tighter organisational control of workers). In the emergency services, tensions clearly exist between these changes and the motivations and expectations of volunteers. Emergency service organisations will need to strive for a workable balance between the benefits and negative consequences of these shifts. To do this, the skills and capacities of the people leading and supporting volunteers will need to be further supported and developed, and more relational rather than transactional workforce management approaches emphasised.

## 4

### Adapt technology to workers.

As technology continues to change rapidly, policy should focus on promoting technology that adapts to diverse workers, rather than taking the more traditional approach of expecting workers to adapt to technology. Clever and appropriate development and use of new technology should be led by the outcome sought, and not by the tools themselves. Furthermore, there is a need to closely consider human-technology interactions. For example, technology-enabled selection processes are increasingly invasive, raising ethical and other issues that have not yet been resolved. Consequently, policy needs to provide protections for workers from issues such as unfairness and inequality in job selection and other workplace practices arising from new technology and uneven technology access, especially in rural areas. As such, new technology needs to be adopted and applied carefully and in close consultation with workers.

## 5

### Understanding and managing public expectations and brand is increasing in importance for emergency service organisations.

Greater attention is needed to managing public expectations of emergency service organisations, including focused brand management to attract potential workers, both paid and volunteer. Managing expectations and relationships with a widening array of stakeholders will be increasingly important for supporting wider workforce and emergency management capability. Additionally, the sustainability of the volunteer workforce would benefit substantially from a greater focus on measuring, communicating, and promoting the value of volunteering to the wider public and to governments.

## 6

### A diversifying workforce means diversifying workforce management within inclusive organisational cultures.

Managing the diverse workforce of the future will require diversification also of workforce management approaches to suit different needs and preferences. This includes ongoing removal of barriers to different groups' participation in emergency management as volunteers, employees, service delivery partners and contractors. It also means carefully considering key differences between employees and volunteers, and the relationships between them. This diversification needs to occur within a context of further developing and entrenching inclusive organisational cultures.

# INTRODUCTION

Australia's emergency management sector sits within an environment that is becoming ever more complex, dynamic and uncertain. This is due to factors like a growing population, changing climate, social and cultural change, and the impact of new technologies. At the same time, the nature of how we work, in both paid and voluntary ways, is also changing. Work is greatly influenced by changes in technology and lifestyle, and by increasing levels of interconnectivity and cross-boundary collaboration.

In this dynamic context, planning for the sustainability, effectiveness and wellbeing of the future emergency management workforce takes on considerable importance.

The workforces of Australia's fire, emergency services and rural land management agencies (referred to in this report as emergency service organisations) are crucial to Australia's emergency management capability. These workforces include career and volunteer members, they also include first responders as well as professional, technical, and administrative support staff and volunteers (hereafter referred to collectively as the emergency service workforce).

This report provides a consolidated, overview picture of emerging workforce challenges and opportunities likely to face emergency service organisations over the coming decade. It is a first step in bringing together the wide range of research that can inform and strengthen strategic workforce planning in these organisations.

The report presents a high-level summary of key trends and developments highlighted in research from beyond the emergency management sphere. It identifies potential implications of these trends and developments for the future emergency service workforce. It also highlights key Bushfire and Natural Hazards Cooperative Research Centre (CRC) affiliated research that can assist workforce planners to understand and respond to these implications.

The bulk of the combined emergency service workforce are volunteers. According to the Productivity Commission, there were around 212,293 fire service volunteers and 23,897 state and territory emergency service volunteers across emergency service organisations in Australia in 2017-18 (Commonwealth of Australia, 2019). Volunteers therefore formed around 91% of the fire service workforce, and 97% of the state and territory emergency service workforce in that year. Furthermore, given the geographic size, changing risk profile, and demographic shifts in Australia, a heavy reliance on volunteers is likely to continue into the future. As such, volunteers and volunteering issues form a key component of the terrain covered in this report.

While focusing on the emergency service workforce, this report is also based on recognition that the emergency services are part of a wider emergency management workforce that is also diverse and changing. The complete emergency management workforce extends far beyond the emergency services to include the volunteer and paid workforces of not-for-profits active in recovery, local governments, wider community sector and faith-based organisations, government departments, private businesses and more. Increasingly, under the influence of changing community expectations, and policy goals of community resilience, shared responsibility, and clear risk ownership (COAG, 2011; Commonwealth of Australia, 2018), 'unaffiliated' community members and groups are also recognised as a valuable part of the emergency management workforce (AIDR, 2017).

Consequently, the future emergency management workforce is not going to be restricted to the affiliated volunteer and paid workforces of formal emergency service organisations. Therefore, this report considers the future emergency service workforce within the context of how it interacts with and forms a part of the wider emergency management workforce.

EMERGENCY SERVICES Workforce 2030

## Project background

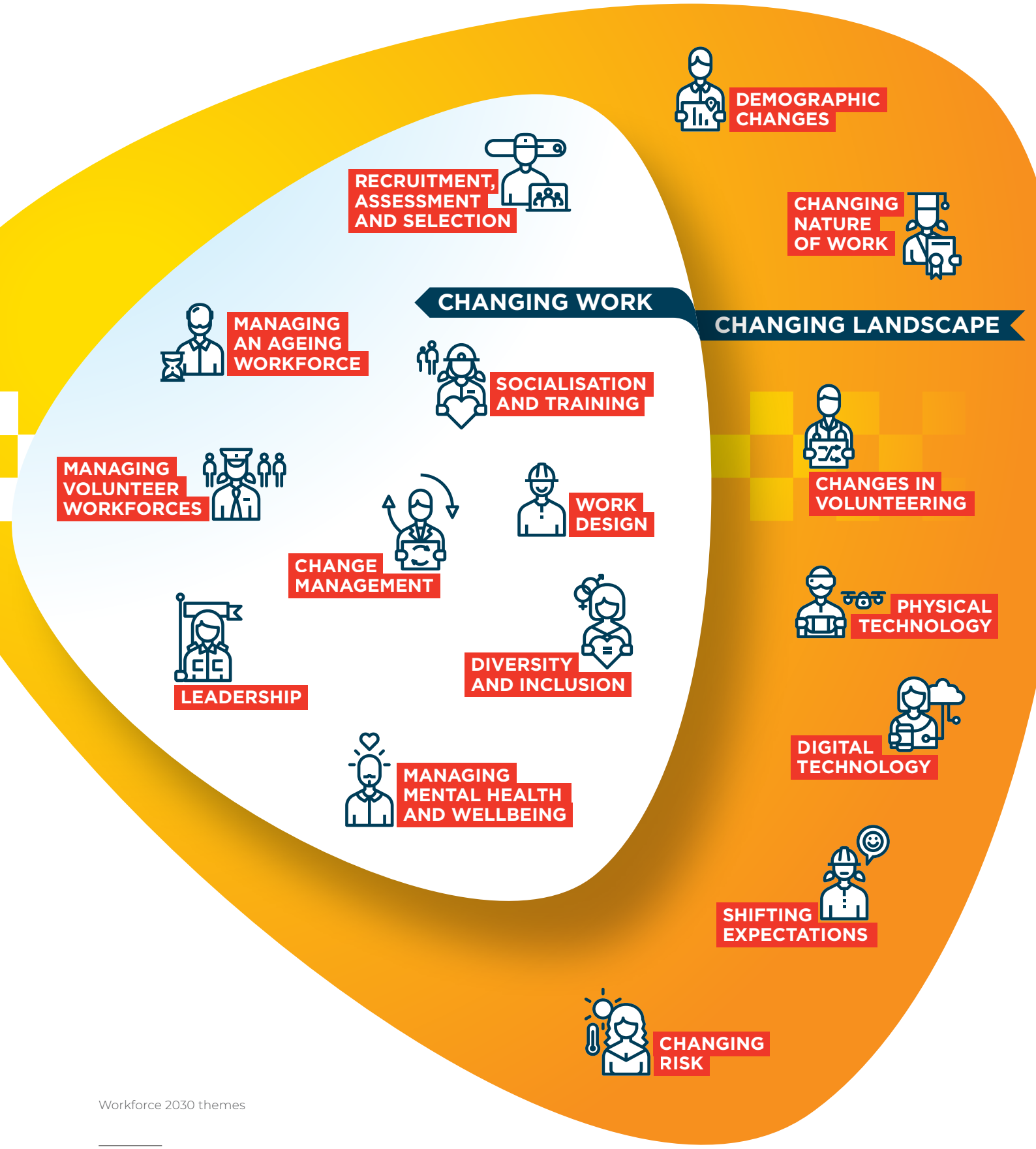
This integrative report is based on evidence captured in two literature reviews prepared through the *Workforce 2030* research utilisation project (see 'Supporting resources' below). The literature reviews contain more detailed evidence regarding the key trends and developments highlighted in this report.

The starting point for the *Workforce 2030* project was a question: what can research from outside the sphere of emergency management add to our knowledge of wider trends and developments likely to shape the future emergency service workforce? It was a question raised in response to a Workforce and Volunteerism Research Advisory Forum held by the Bushfire and Natural Hazards CRC in May 2019. This forum highlighted the need for a big picture view of current research that can inform future-focused workforce planning in emergency service organisations.

*Workforce 2030* was coordinated by researchers at Curtin University and RMIT University for the Bushfire and Natural Hazards CRC. The project was supported by the Workforce Management Group of the Australasian Fire and Emergency Services Authorities Council (AFAC) and endorsed by the AFAC Council. It was overseen by a Steering Committee comprised of AFAC member representatives.

The emergency management sector already benefits from a strong body of research on issues impacting the future emergency service workforce. Much of the most recent research has been undertaken within the program of the Bushfire and Natural Hazards CRC. A focus within this program has been the development of tools and resources to assist planners and managers within the sector to make informed decisions about the future.

In this context, the *Workforce 2030* project aimed to contextualise and add to research within the sector by summarising major trends and developments revealed in wider research beyond the emergency management sphere and potential implications for the future emergency service workforce.




Workforce 2030 themes

**Figure 1**

# About the report

This report is organised around the set of 16 themes shown in Figure 1. Seven themes concern the changing landscape, or external environment of emergency management, while nine represent key aspects of the changing nature of work and of workforce management within organisations.[1] The themes were determined in consultation with the project Steering Committee.

The report was compiled by the coordinating researchers at Curtin University and RMIT University, but it represents the collective knowledge of a much wider range of researcher and end-user contributors acknowledged in Appendix 1.

## Intended audience

The primary intended audience for this report is people involved in workforce planning at all levels within emergency service organisations including fire, emergency services and land management agencies. In addition, the report is likely to be useful for planners in other emergency response services, such as ambulance services, surf life saving and marine rescue, as well as a range of other organisations that coordinate and support the wider emergency management workforce before, during and after emergency events.

## Intended uses and potential next steps

Feedback from stakeholders raised numerous opportunities for applying and extending on the knowledge captured in this report.

The primary uses of this document are likely to be:

1. To provide a high-level research base to inform workforce-related strategies in emergency service organisations
2. To stimulate conversations amongst internal and external stakeholders about future workforce needs, challenges and opportunities, and about strategic workforce planning priorities
3. To support existing programs and services by providing evidence and argument for their current and future relevance.

As acknowledged above, this report is a first step in bringing together research to inform and strengthen strategic workforce planning. Future endeavours can expand on the foundation provided here by:

- systematically synthesising research that cuts across the many interconnections between the themes in this report
- mapping current gaps in data, knowledge, research and capability against the needs and recommendations highlighted in the report and accompanying literature reviews, e.g., to identify new skills and capabilities that need to be developed for the future
- explicitly and collectively working through potential implications with emergency service stakeholders, and the uncertainties within them, using scenario planning approaches (e.g., Maier et al., 2016; Young & Jones, 2016)
- engaging researchers and end-users to identify how these issues relate to particular agency contexts and how the research here can inform specific programs and services
- guiding the development of case studies and data collections to support shared learning and establishing the case for change.

This report will help to catalyse beneficial next steps towards building a strong and comprehensive research foundation to underpin effective strategic emergency services workforce planning in Australia.

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1 The terms 'work' and 'workforce' are used in this document to refer inclusively to both paid and voluntary forms of work. Moreover, the term 'professional' is also used to refer to paid and volunteer workers. This aligns with the Emergency Management Professionalisation Scheme usage: "'Professional' and 'Professionalisation' refer to the technical and ethical standards of practice that we set for ourselves: professionalisation is open to everyone regardless of whether they are paid or volunteer, and regardless of the particular emergency management function they undertake", see https://www.emps.org.au/about-us .

## Supporting resources

This report is underpinned by two literature reviews that provide deeper examination of the trends and developments identified.

- The *Changing Landscape Literature Review* considers trends across the seven external environmental themes.
- The *Changing Work Literature Review* focuses on the nine themes that are relevant to emergency service organisations' internal workforce management environments.

A set of communications outputs is also available to support workforce planners to raise awareness of issues and stimulate conversations about future workforce needs with internal and external stakeholders, see https://www.bnhcrc.com.au/driving-change/future-workforce.


Photo: Country Fire Authority

# THE CHANGING LANDSCAPE

A range of major trends will change the way Australians live and work in the coming years, forcing us to think critically about forthcoming opportunities, challenges and uncertainties. This section outlines key trends and developments in this changing landscape (i.e., the external environment) that fire, emergency service and land management agencies operate in across seven themes. Together, these shifts will shape the future environment for the emergency service workforce.

The seven themes are outlined in Figure 2 and interactions exist between the trends and developments highlighted. This is clearly evident in the potential implications highlighted throughout this report.

The *Changing Landscape Literature Review* provides more detail from current research about these trends and developments.

Seven Changing landscape themes

**Figure 2**

DEMOGRAPHIC CHANGES

CHANGING NATURE OF WORK

CHANGES IN VOLUNTEERING

PHYSICAL TECHNOLOGY

DIGITAL TECHNOLOGY

SHIFTING EXPECTATIONS

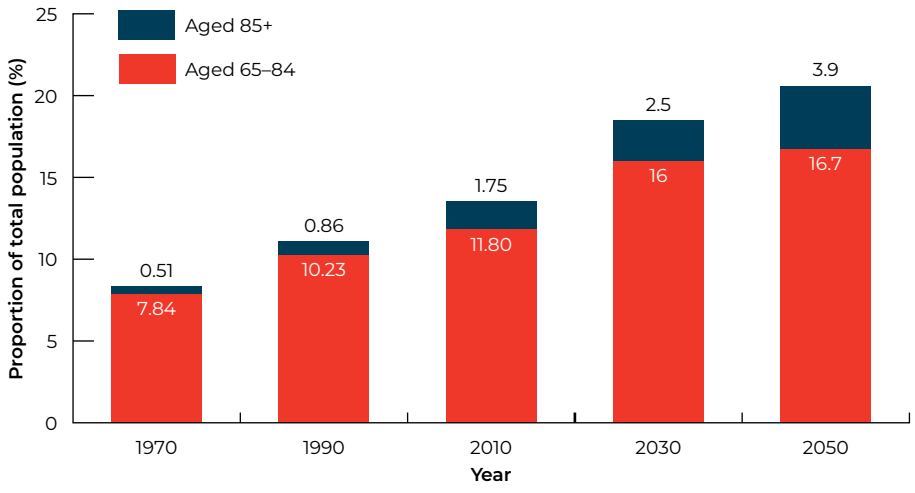
CHANGING RISK

# DEMOGRAPHIC CHANGES

Demographic change refers to variations in population characteristics (e.g., age, origin, location, education levels) and is a critical external environment factor that will shape workforce capability requirements over the next decade.

## Key trends and developments

- Net overseas migration is a key driver of Australia's rapidly growing population, which is predicted by the ABS to grow to approximately 30 million people in 2030 (ABS, 2018). Contrary to previous trend forecasts, in 2020 Australia entered its slowest population growth in more than a century due to international border closures related to COVID-19. The long-term effects of border closures and COVID-19 remain uncertain.
- Australia's population ageing trend (depicted in Figure 3) presents challenges for labour supply and organisations will need to overcome barriers to mature age participation in the workforce.
- Population across smaller cities, rural communities, regional centres and remote areas continue to shift due to many factors. Rural and regional communities are experiencing complex demographic shifts, resulting in uneven and challenging circumstances across locations. Some significant influences on the demographic structure of rural and regional communities include population ageing, depopulation, youth out-migration and rising population mobility.
- The Australian population overall is urbanising and densifying. The transformation to more urbanised structures will lead to new patterns of living, travel and demand for services, thereby placing pressure on existing infrastructure networks.




Proportion of Australia's population aged over 65 years (Figure based on data from ABS, 2018 ; ABS, 2019).

**Figure 3**

## Potential implications

### Implications from growing population in relation to numbers, diversity and age

- Fluctuating population distribution and higher levels of mobility and volatility will pose a challenge for emergency service delivery. Emergency service organisations will need to place emphasis on engaging new residents to increase awareness, preparedness, and safe responses and manage their expectations (Foster et al., 2013a).
- As Australia's communities continue to become more diverse, engaging with culturally and linguistically diverse community members will become ever more important for emergency service personnel (see also 'Diversity and Inclusion', page 40).
- Population growth benefits Australian communities by supporting reduced ageing and adding to the labour force, yet it puts pressure on infrastructure, services, and the environment. At the same time, an ageing population will also place greater demands on government services. It is therefore important for relevant bodies to plan ahead for infrastructure, housing and service delivery needs (including targeted community interventions) to manage these implications of population changes.
- Population changes also present opportunities. Some regional areas will benefit greatly from population growth, providing a stronger basis for community participation in preparedness and response activities than before.
- There needs to be a focus on effective transfer of knowledge and leadership from senior, experienced leaders, as well as on emerging leaders. Organisations will need to prioritise embracing generational and cultural diversity in their workforces over the next decade.
- In future, emergency management will be confronted with larger populations and an increased number of assets at risk. Given increasing demands on emergency services, it may be worth considering alternative approaches to increase community preparedness and resilience consistent with the idea of sharing responsibility between agencies and community as set out in the National Strategy for Disaster Resilience (Foster et al., 2013b).

### Implications from population movements

- Rural communities are becoming increasingly reliant on volunteers (Winterton & Warburton, 2014). This is further fuelled by a contraction in direct government service delivery in rural areas and outsourcing of public services to volunteer-based nongovernment organisations (see also 'Shifting Expectations', page 25).
- While declining and ageing populations in regional and more isolated towns present challenges, older residents can also be a driving force within community activities and volunteering. Moreover, those who relocate to rural communities often contribute novel and key skills and experience they bring with them from other areas (Winterton & Warburton, 2014).
- Declining and ageing of rural populations is a trend that is intersecting with the contraction of land management and forestry industries to create workforce challenges for land management agencies.
- The net migration of young people from rural to urban areas means that volunteer-based services in rural communities may struggle to recruit younger volunteers, simply because there exists only a small pool to recruit from (Holmes et al., 2019). However, long-term rural residents have been found to be more likely than newer residents to have volunteered (Davies et al., 2018).
- Alongside the unique challenges found in rural areas due to their geographic isolation, rural Australians generally experience higher levels of community interconnectedness and increased community participation, volunteering and informal support from their local community compared to urban communities (Ziersch et al., 2009). Furthermore, volunteering is recognised as a hugely valuable productive ageing activity (Warburton & Peel, 2008; Winterton & Warburton, 2014). Emergency service organisations may use this to attract more volunteers, particularly in rural communities where there is an older population.

## Related research

- The Australian Natural Disaster Resilience Index: A system for assessing the resilience of Australian communities to natural hazards, see https://www.bnhcrc.com.au/research/resilienceindex
- ARC Centre of Excellence in Population Ageing Research, see https://cepar.edu.au/

DEMOGRAPHIC CHANGES

# CHANGING NATURE OF WORK

Work can be defined as "human activity that is goal directed, purposive, or instrumental and creates value to society" and is the processes by which humans transform resources into outputs (National Research Council, 1999, p.22). The nature of work is changing and in many areas the pace of change is increasing (World Bank, 2019). The rapidly changing world of work creates both opportunities and new uncertainties.

## Key trends and developments

Some key trends in paid work and employment have emerged in recent decades including the composition of the workforce, the content of jobs and the employer-employee relationship. Individuals are increasingly required to quickly adapt to changes, whether expected or unexpected, and think about their career in a more sustainable way (e.g., career transition, skills upgrading). Under these circumstances, sustainable employability, defined as employees' capacities to function in work throughout their working life, has become more important to help individuals achieve meaningful and lifelong employment.

- Workforce demographic change influenced by factors such as global migration trends and the ageing population is increasing the diversity of the future workforce. This makes fostering an inclusive workplace a priority for organisations.
- The changing nature of employment relationships and conditions, such as the growth of the gig economy, are generating new ways of thinking about how services are delivered, and are enabling the rise of demand-driven services.
- There is an increasing awareness and uptake of flexible work, particularly during the COVID-19 pandemic, with recent studies suggesting that employees who telework are at least as productive as those in the office.
- Employment security and rising job precarity are a concern, particularly for certain groups of workers. Technicians, machinery operators, clerical workers and drivers comprise a group whose sense of security is falling quickly. In contrast, professional workers, have maintained fairly stable levels of job security and sales workers have improved in their perceptions over recent years.
- Growing uncertainty is a defining feature of new technology as it shapes future work tasks and roles.

Regarding technology, two central questions confront anyone seeking to describe the way technology is changing human work.

- **First,** how can people work effectively in a highly connected world? People are becoming more tightly interdependent with other people as well as with technology through teams, networks and interconnected systems.
- **Second,** how can people work adaptively in an increasingly uncertain world of rapid, unpredictable and sustained technological change?

## Potential implications

- Changing employment relationships, employee demographics and technology will each have sustained impact on the emergency service workforce. Some of these changes will be particularly challenging for emergency service workers who must already work in unpredictable physical environments, which themselves are generating more frequent and severe emergency events. Many emergency service workers, therefore, do not have the same advantages as knowledge workers, for example, for whom greater flexibility is easier to envisage. However, transformational changes underway in the management of remote operations can significantly augment the roles of the emergency service workforce. In addition, the command and control structures of emergency management provide a foundational capability that can transform to integrate changing technical capacity.
- The ability to engage across traditional boundaries is enabling non-routine solutions to problems via collaborative innovation both within and across sectors. Additionally, access to knowledge and skills is more available from diverse sources across previously disparate areas of work, and the potential to shift from vertically integrated structures to horizontally integrated networks promises new ways of working and solving problems.
- Remote capabilities are expanding as intensive data produced by complex networks of communication (e.g., dispersed geolocation sensors) is managed and analysed more quickly and intelligently through processes such as machine learning. The complexity of these networks will continue to place new demands on the emergency service workforce. While some information tasks will be less demanding, there will be more complex requirements on people to integrate and update information. Knowledge about how information is generated through remote systems will be needed if individuals are to have appropriate mental models of the environment and are prepared to trust in the new forms of data and decision-aids that will be forthcoming.
- As employee attitudes and expectations around work are shifting, emergency service organisations may need to rethink their strategies for attracting and retaining their employees. For example, there may be a need to consider agile policies and processes in order to respond to continuous change in a timely manner if organisations want to maintain a competitive advantage for attracting the top talent.
- While technological change can often make work easier, it also has the potential to diminish the breadth of roles, decrease wages and increase work intensity and demands (Ikin et al., 2019). It is important to focus on improving work conditions with technology to allow humans to focus on more meaningful, stimulating and creative tasks (see also 'Work Design', page 38).
- Further to the point above, a key implication of tasks requiring less skill than in the past is that the skills of human operators will decay or not be developed adequately from the start, due to the limited opportunity to practice them. This has direct implications in some areas of emergency service organisations where call outs are infrequent. Thus, as automation and technology are increasingly embedded into work, it is important for emergency service organisations to consider technology-related human factors issues, such as good communication and coordination to equip human operators with the situational awareness to respond to any automation failures that might arise (Bearman, 2013).
- The changing nature of work does not happen in isolation. Myriad factors, some of which have been discussed above (e.g., demographic changes and technological advancements), that happen outside of work and organisations should be taken into consideration when considering forces that will impact the workforce over the next decade. To this end, the six other focal themes highlighted in this phase of the report should be given consideration to ensure that they expand, rather than limit the developmental potential of the emergency service workforce over the next decade.

# CHANGES IN VOLUNTEERING

The United Nations defines volunteering as "activities undertaken of free will, for the general public good and where monetary reward is not the principal motivating factor" (UNV, 2018). This section identifies broader volunteering characteristics and trends with implications for volunteer workforce planning in the fire and emergency services. It includes trends in formal volunteering (organisation-based) and informal volunteering (outside of an organisational context) and focuses on the most recent available research.

## Key trends and developments

- Formal volunteering rates have declined in recent years, with more people choosing shorter-term engagements over prolonged commitment. Time restrictions continue to be a major factor underlying these trends.
- More flexible and diverse styles of volunteering are preferred by more volunteers.
- Helping others remains a core motivation for volunteering, but motivations are also now recognised as diverse and shaped by specific contexts.
- Recognition and measurement of the scope and contributions of informal volunteering are increasing. It is also well established that volunteering by culturally and linguistically diverse (CALD) and Indigenous community members are under-represented in formal Australian volunteering data due to their higher rates of informal volunteering (CIRCA, 2016).
- Prevailing assumptions about both older and younger volunteer cohorts are being recognised as overly simplistic. For example, older Australians may not necessarily have more time and inclination to volunteer. Meanwhile, despite media stereotypes of younger generations as individualistic and self-oriented, research shows that young people care deeply about contributing to society but that they tend to do it in different ways compared to older generations.
- Social media has lowered barriers to participation in disaster management and formal organisations are no longer the gatekeepers they once were.
- Informal, spontaneous and emergent post-disaster volunteering is here to stay. The knowledge and capacity to integrate it with formal response systems is slowly increasing.
- COVID-19 is having diverse and mixed impacts on volunteering in different settings (that research has documented to date). A report commissioned by Volunteering Australia suggests that COVID-19 has had a more significant negative impact on volunteering than on paid work (Biddle and Gray, 2021).

## Potential implications

- The volunteering trends highlighted above are closely intertwined with other external environmental shifts outlined in this report. These include demographic change, especially rural depopulation and ageing and youth migration to urban areas, as well as the changing structure of work and the development of new communications technology (e.g., McLennan and Birch, 2005).
- The declining rates of formal volunteering in recent years are a key source of concern for workforce planners and volunteer leaders in the emergency services, both of whom report growing difficulties recruiting and retaining committed volunteers in many areas, and who expect these difficulties to grow further in future (McLennan, 2020).
- Due to the impacts of new communications technology, people have greater choice in how they volunteer to help in disaster management, including pathways that are less time intensive and demanding compared to formal emergency service volunteering. The need to understand various motivations for joining the emergency services, and to clearly and accurately communicate the benefits and opportunities of emergency service volunteering to a wider range of potential new volunteers, is now more important than ever (e.g., Muhammad Farid et al., 2019).
- The importance of adapting volunteer strategies and management approaches in response to wider volunteering trends, and recognition that the approaches of the past will not serve organisations well into the future, will become even more important over the next decade. Within this, greater flexibility in all aspects of emergency service volunteering and the effective and careful use of new technology to coordinate and engage volunteers (while also protecting the social connection that volunteering brings), are key areas (e.g., McLennan 2020).
- In the context of an ageing population, recruiting both younger and older volunteers will continue to be important for volunteer sustainability. Interestingly, there are strong similarities in the strategies recommended in research to attract these cohorts. This is because both younger and older cohorts are discouraged from volunteering for similar reasons. In particular, both find a lack of autonomy and an "increasingly regulatory organisational environment" discouraging (Warburton, 2010).
- The lower barriers to participation in disaster management and the prevalence of informal, spontaneous and emergent forms of post-disaster volunteering can create new challenges for emergency management coordination. However, it also opens up new opportunities to mobilise greater community capacity (Roth and Prior, 2019).
- Recent research at Charles Darwin University shows that "the classic model of volunteerism has limited applicability in remote Indigenous communities for various social, economic and cultural reasons" (Russell-Smith, Sangha, & Edwards, 2020). The different cultural and social norms of community service and social obligation in these communities, along with particular community settings, can mean this model is not well suited for local conditions. Alternatives include harnessing the potential of the expanding Indigenous Ranger Program.
- Considerable uncertainty remains about the future shape of volunteering in emergency management. For example, the following issues will challenge volunteer workforce managers in the future, and little is yet known about them:
  - How change agents can best bring the existing workforce along on the journey to adapting emergency service organisations to the changing nature of modern volunteering.
  - Whether and how trends in digital volunteering will unfold in Australian emergency management in the future.
  - The implications for emergency service organisations and for emergency coordination arising from potential future disruptions and breakthroughs in communications technology, particularly new platforms for self-organisation and coordination among emergent groups and informal volunteers.
  - Whether formal volunteering rates in Australia will continue to decline in the future, stabilise or increase.
  - How the longer-term impacts of COVID-19 on volunteering and volunteer management – both negative and positive – will play out for emergency service organistions.

## Related research

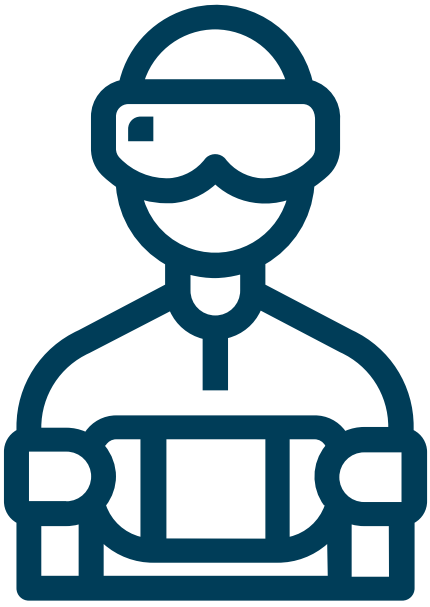
- Out of uniform: Building community resilience through non-traditional emergency volunteering (RMIT, Bushfire and Natural Hazards CRC) see https://www.bnhcrc.com.au/research/communityresilience
- Emergency volunteering 2030 (RMIT, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/3533

# PHYSICAL TECHNOLOGY

In this report, we use the term 'physical technology' to encompass the tangible/physical forms of technological advancements related to materials, machines, assets and infrastructure (excluding computer hardware, see following section) to differentiate from technology related to digital information. Technological developments are far-reaching and often their impact on practice is very difficult to anticipate. This section focuses on key types of technological developments that we anticipate will pose opportunities and challenges to the emergency management sector, while acknowledging that these are not an exhaustive set.

## Key trends and developments

- By 2030, Australian cities will need to accommodate the added pressure on critical infrastructure, such as buildings and communication infrastructure, stemming from our growing population and increased density.
- As telecommunication technologies continue to evolve and expand in the upcoming decade, Australia will increasingly rely on a high-capacity communications network. Alongside liveability and productivity advantages are communications infrastructure challenges, such as cybersecurity risks, ensuring network coverage and quality in rural and remote Australia, and deploying sophisticated technologies reliant on good communications.
- 3D printing/additive manufacturing will transform the way we manufacture and serves as a key to developing sustainable and disaster resistant infrastructure and planning.
- The field of robotics encompassing autonomous vehicles and drones are increasingly prevalent and sophisticated. As hardware continues to advance alongside real-time mapping algorithms, the field of robotics can provide further opportunities for disaster monitoring and aid supply.
- Nanotechnology and material science have the potential to improve community resilience particularly in the areas of building materials (e.g., stronger concrete for safer infrastructure), sensors (detection of chemical and biological agents), and medicine (e.g., rapid diagnostics and vaccines improving public health decision-making and reducing spread of disease).



## Potential implications

- Ageing infrastructure and underinvestment in maintenance are likely to impact the reliability of services. Gissing et al. (2018) highlighted that local road, regional rail, and regional water infrastructure are of most concern. Importantly, infrastructure planning and maintaining are critical considerations in the context of improving resilience against natural hazards (Infrastructure Australia, 2019).
- Growing cybersecurity risks associated with increased usage of interconnected digital services will require capability within emergency service organisations, such that emergency service organisations are prepared to identify and respond to consequences arising from network hacking and disruptions with critical infrastructure.
- The deployment of 3D printing technologies to areas impacted by disasters should provide opportunities to fast-track repairs of essential infrastructure and remove logistical issues that may rely on overseas suppliers.
- Trends in agriculture such as mechanisation, enhanced productivity and a declining workforce are likely to continue to lead to larger, more asset-laden farms with fewer people available for protection during an emergency (Foster et al., 2013). This demographic-related by-product brought about by such advances in machinery (e.g., autonomous farming) presents challenges for emergency service organisations with regards to human resources during an emergency in agricultural areas.
- There will be new challenges associated with autonomous drones and vehicles. For example, communication between first responders and a command centre may be obstructed by damaged or overloaded network infrastructure. Ensuring autonomous vehicles operate safely and reliably particularly in populated areas will be crucial (National Intelligence Council, 2012).
- Autonomous vehicle technology may transform many aspects of disaster management. As drones become smaller and more affordable, they are likely to become a standard piece of equipment to assist emergency responders (Gissing et al., 2018).
- Advances in wearable exoskeletons show promise for enhancing emergency service organisations' workplace ergonomic issues, including injury prevention and reducing the time injured employees are out of work (Forbes, 2019). However, more research is needed in this area to identify whether this technology is an effective workplace ergonomic intervention for emergency service organisations in particular (Howard et al., 2020).

## Related research

- Built environment research (Bushfire and Natural Hazards CRC) see https://www.bnhcrc.com.au/research/cluster/built-environment

*Critical infrastructure systems, networks and supply chains are increasingly complex and interconnected, particularly given the rapid proliferation of new technologies and the globalisation of markets and the production process. Disruptions in one sector can quickly affect other sectors and have the potential to cause serious cascading failures. Australia is also highly dependent upon particular types of goods and services that originate overseas. An improved understanding of interdependencies between critical infrastructure sectors and regions, is essential to strengthening resilience.*

Critical Infrastructure Resilience Strategy, Commonwealth of Australia, 2015, p.8

# DIGITAL TECHNOLOGY

Advancement in digital technology offers new opportunities for the emergency management sector to deal with myriad complex challenges, but may also create new types of challenges that can overwhelm decision makers. While, as with physical technology, digital technological changes are pervasive, with unknown impacts, below, seven advancements in digital technology were identified that appear likely to progress and likely to impact the emergency service workforce of 2030 and beyond.

## Key trends and developments

- Advanced development in computing creates new possibilities and new ways to approach problems that previous computing power have difficulties performing.
- Artificial intelligence and machine learning can replicate human intelligence skills to make complex decisions and perform tasks autonomously.
- The Internet of Things (IoT) and advancements in 5G mobile technology will provide faster and more simultaneous connections for people, everyday objects and infrastructure.
- In an increasingly data-driven world, organisations that focus on obtaining and interpreting data to boost functioning are likely to have a competitive advantage.
- Advancements in virtual and augmented reality are making headway in digital education by creating more immersive and engaging experiences for users.
- As communications advances alongside mapping and remote sensing technology, real-time data handling will increase a demand for data specialist to turn raw and 'messy' data into tidy, interpretable and relevant information.
- The combination of social media, mobile technology and geolocation technology has enabled crowdsourcing of data via the public and access to volunteered geographic information.

## Potential implications

- The working landscape, including emergency service workforce, will likely emphasise adaptability, flexibility, people and technical skills, and the ability to learn as key skills of the future. Researchers and practitioners have long discussed the likelihood of professions being automated by computers and robots in the coming years. While some jobs may disappear, most jobs are being impacted and reshaped by technology. New jobs are also being created because of technological advancements.
- When considering applying new skills to the use of increasingly sophisticated technology, emergency service organisations will also need to consider the associated expectations and implications of new skills and training needs for ageing and volunteer workforces.
- Currently, data specialists are difficult to source and not enough specialists are being trained to meet vacancies requiring advanced skills (Miller & Hughes, 2017). As emergency service organisations further rely on digital technology such as artificial intelligence and become more data-driven, the field is faced with fierce competition with others, such as large technology companies and digital entrepreneurs to recruit people with the right skills.
- As mapping and remote sensing technology continues to advance, emergency service organisations can benefit from the shorter and more real-time reception of data. However, to be able to interpret the data and to use it effectively, emergency service organisations need a workforce that is not only able to understand imaging and sensing, but also computer science and engineering competencies to optimise how to process data from satellite images.
- Emergency service organisations will also need to contend with a range of flow-on issues arising from access to faster and more powerful predictive capabilities enabled by new technology, as well as its inherent limitations. These include, for example: skills and training needs for Fire Behaviour Analysts in not only the 'science' but also the 'art' of forecasting, changes in incident management and operational processes (e.g., for undertaking and justifying planned burns, use of fire behaviour models by incident controllers) and effective communication of uncertainty to communities and other stakeholders (e.g., Neale and May 2020).
- New opportunities for improving flood prediction are also being identified from new technology. Examples include IoT architecture for sensing of hydrological data (Khalaf et al., 2020), and the use of crowdsourced water level observations in hydrological models to improve flood predictions (Mazzoleni et al., 2017).
- While there are many opportunities to make better use of data and translate this into information and knowledge, an ongoing challenge for emergency service organisations may be the associated issues of knowledge management and organisational learning. Emergency service organisations will also need to account for the capability of practitioners and communities to effectively interpret more complex and larger volumes of information. In some cases, this capability may come from new forms of partnership. For example, skilled volunteer-based Virtual Operations Support Teams have proven effective in managing the data deluge that accompanies large-scale disaster events (see Roth and Prior, 2019).
- Newer and more affordable technology is making it simpler for organisations to use virtual, augmented or mixed reality environments to support various aspects of training, development, and skills maintenance. These platforms can offer the opportunity to simulate environments that otherwise would be considered too high risk and offer potential costs savings for emergency service organisations.
- With increasing technological evolution observed in recent gamification and extended reality, the emergency management sector can use technological applications to their advantage in preparing the workforce to respond and recover from events. For example, emergency preparedness is a promising application for serious games as traditional preparedness instructions are often not attended to or not adequately understood by people (Chittaro & Sioni, 2015). However, a key challenge will be to adopt technologies that credibly replicate operational conditions but are also financially achievable.


- Emergency service organisations could leverage advanced technology to provide 24/7 oversight and intelligence of emergency events and disasters. As the Infrastructure Australia (2019) report noted: digital communication networks are enabling early warning services for major disasters or events. Technology has also helped to improve the mobilisation and coordination of emergency services, particularly volunteers, and enabled centralised management of emergency response.
- Wearable technology in the forms of smartwatches, jackets, head mounts made available through IoT, and that are equipped with sensors, can help monitor a first responder's vitals. They can also monitor and alert any excessive physical strain and stress while on the job (Sims, 2019).
- Related to the note above, the IoT, 5G and wearable technology clearly offer many potential opportunities for emergency service organisations. However, some of the potential developments using IoT may rely on other parties investing in new technology (e.g., businesses and householders). In the case of 5G, this is likely to be most relevant for the more built-up areas of each state and territory given the infrastructure requirements. There is also potential to bundle these technologies.
- Advances in, and increased use of, social media platforms provides the public with additional information and empowers them to make decisions and to collaborate (Gissing et al., 2018). Some emergency service organisations are also increasingly using these tools to target specific and harder to reach parts of the community (see Hayes et al., 2019). This also reduces the barriers to participating in disaster management and increases people's self-organising capacity. This is likely to expand the available emergency management workforce, but also complicate disaster governance and coordination.
- Social media's capacity to gather vast amounts of personalised and geolocated data is also potentially useful for incident intelligence, e.g., via crowdsourcing and volunteered geographic information (Gissing et al., 2018, Haworth and Bruce, 2015). However, researchers have cautioned against heavily relying on social media given their vulnerabilities to disruption, therefore the public should be prepared to utilise alternate methods of communication.
- It is important that all new technologies for possible use within the emergency services context be carefully examined to determine their relevance, robustness, and longevity. As infrastructure networks increase in complexity and interdependence, and the IoT grows, unexpected risks and cascading impacts of failure will likely accompany (Boin & 't Hart, 2010). Greater reliance on technologies and their interdependencies also increases vulnerability to threats such as solar storms and cyber-attacks. The retention or development of low-tech systems that will enable emergency services work to continue in the absence of high-tech is also necessary.
- Related to the above point, the 'Robodebt' scandal in Australia serves as a warning against poor and inappropriate use of automation by government organisations, which has potential in extreme cases to harm relationships with communities and undermine public trust (Braithwaite, 2020).
- In considering the future use of digital technology for situational awareness, communication etc, emergency service organisations also need to be mindful of implications arising from the digital divide that exists between those with access to information via digital technology and those without (Haworth and Bruce, 2015).

## Related research

- Bushfire predictive services research cluster (Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/cluster/bushfire-predictive-services
- Communication and warnings & Sustainable volunteering research clusters (Bushfire and Natural Hazards CRC)
- A range of PhD projects under these research clusters examine implications and opportunities associated with new communications technology.
- See https://www.bnhcrc.com.au/research/cluster/communications-warnings and https://www.bnhcrc.com.au/research/cluster/sustainable-volunteering

# SHIFTING EXPECTATIONS

Changing expectations is a macro trend cutting across discussions about government, public administration, the voluntary sector and emergency management in Australia today, with implications for future planning and investment in government and industry in Australia (CSIRO Futures, 2016). It is not only public expectations of government that are changing, however. They are one part of a generational shift occurring in relationships between civil society (i.e., the voluntary, non-profit or community sector), the state (i.e., governments) and the private sector, with the boundaries between these spheres becoming more fluid and increasingly blurred. Significantly, these relationships are contested, complex and in flux in Australia, with an unclear trajectory ahead.

This situation has significant implications for how emergency services organisations are expected to function within Australian society and what they can achieve, and therefore their future workforce capability needs.

## Key trends and developments

- Satisfaction with services delivered by state/territory public sectors has broadly remained the same or increased in recent surveys; however, public trust in government is at an all-time low (Cameron & McAllister, 2019). There is also a growing division between an 'informed public' (e.g., well educated, wealthier, engaged politically) who continue to trust government, and the 'mass population', who continue to distrust government (Edelman Trust Barometer, 2020).
- The way public services are delivered in Australia at both federal and state levels are in transition, with changes in public expectations being a key driver. As a result, public service delivery and public administration are likely to look very different in the future. While exactly how is not yet clear, there are strong trends towards greater collaboration, personalisation of services and a growing focus on creating public value (Podger, 2017).
- Deeper community participation and the coproduction of public services are clear trends, but they are also accompanied by the growing and much critiqued, 'responsibilisation' of citizens and civil society. This refers to responsibility being shifted from governments to citizens, with inadequate power distribution and insufficient attention to structural and resource limitations on individual and community capacities (McLennan & Handmer, 2013).


- It is unclear whether current government expectations of the voluntary sector and volunteers to deliver services can be realised into the future, especially in ageing and depopulating rural communities. As direct government service delivery has retracted, there is growing demand on volunteers to deliver a larger portion of community services, especially in rural areas where rates of volunteering are already high, and where ageing and depopulation are increasing demands on already small volunteer workforces (Brueckner, Holmes & Pick, 2017).
- As a result of shifts in public administration and public service delivery approaches, the extent, composition, skills and capacities of the public sector workforce will look different in the future compared to today, with technical, human and conceptual skills becoming increasingly important (Dickinson & Sullivan, 2014). This is likely to lead to a broader conception of this workforce as well as to diversification in how talent is engaged and strategically managed.
- Post-event public inquiries will continue to play an important role in articulating and shaping public and government expectations of emergency management; however, they also have limitations as a basis for policy making and learning that need to be carefully considered (Eburn & Dovers 2015).

## Potential implications

- While trust in emergency services remains high, the low level of trust in government generally, and the widening 'trust inequality' gap, may shape expectations of the emergency services and complicate community engagement.
- It is likely that emergency service organisations will need to pay greater attention to carefully managing expectations in future. According to Dovers and Handmer (2012), rising community expectations combined with a second macro trend of community participation, "suggests that improved processes are needed to manage expectations and to negotiate between the different priorities of the growing range of stakeholders" (p.82).
- Government and societal expectations of greater collaboration, personalisation and commitment to public value in the emergency management sector will grow. However, changes will be needed in the ways services are designed and managed to achieve stronger public value outcomes. In general, public value concepts and practices have not yet penetrated very deeply into emergency management. As they do, the way emergency service organisations design and manage service delivery are likely to change over time accordingly.
- Community participation and coproduction of services are key mechanisms for delivering public value outcomes. Their growth will require a broader conception of the emergency management workforce in planning. Emergency service organisations may also need to re-imagine the extent, composition, skills and capacities of their workforce over the next decade, in line with shifts in expectations of public service delivery and a growing emphasis on preparedness and prevention.
- Critique of the 'responsibilisation' of citizens and civil society serves as a warning to governments and emergency service organisations to consider the extent to which communities, volunteers and not-for-profits have the influence, capacity, freedom, and resourcing to fulfil government and organisational expectations of them, especially in small rural communities. It also indicates that empowering and building the capacity of community leaders to engage in community-based and coproduced emergency management will be of mounting importance into the future (Maskrey, 2011).
- The limitations of post-event public inquiries mean that emergency service organisations need to be careful in how they process and apply lessons from these inquiries to areas such as workforce management, particularly at the strategic level. Because of limitations to post-event inquiries, Eburn and Dovers (2015) caution that "the community needs to move beyond developing policy by royal commission" to adopt "a more mature approach".
- Future political leadership change and its policy implications for government-civil society relationships are a key source of uncertainty surrounding future expectations of the emergency management sector and the emergency service workforce.
- There is uncertainty surrounding future insurance and legal liability implications of changing government and community expectations.

## Related research

- Policies, institutions, and governance project (Australian National University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/governance
- Major post-event inquiries and reviews: review of recommendations project (Aither, Australian National University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/policy-and-economics-hazards/3928
- Inquiries and reviews database (Aither, Australian National University, Bushfire and Natural Hazards CRC), see https://tools.bnhcrc.com.au/ddr/home
- Community expectations projects (Australian National University, RMIT, University of Canberra, Bushfire CRC), see https://www.bushfirecrc.com/category/projectgroup/1-community-expectations
- Mapping and understanding bushfire and natural hazard vulnerability and risks at the institutional scale (Victoria University), see https://www.bnhcrc.com.au/research/vulnerabilityandrisks


Photo: Queensland Fire and Emergency Services

# CHANGING RISK

Changes in Australia's disaster risk profile over the next decade will have significant implications for the emergency service workforce and for workforce planning. Changes in any of the constituent elements of risk – hazards, exposure, vulnerability, and capacity – will affect overall risk levels.

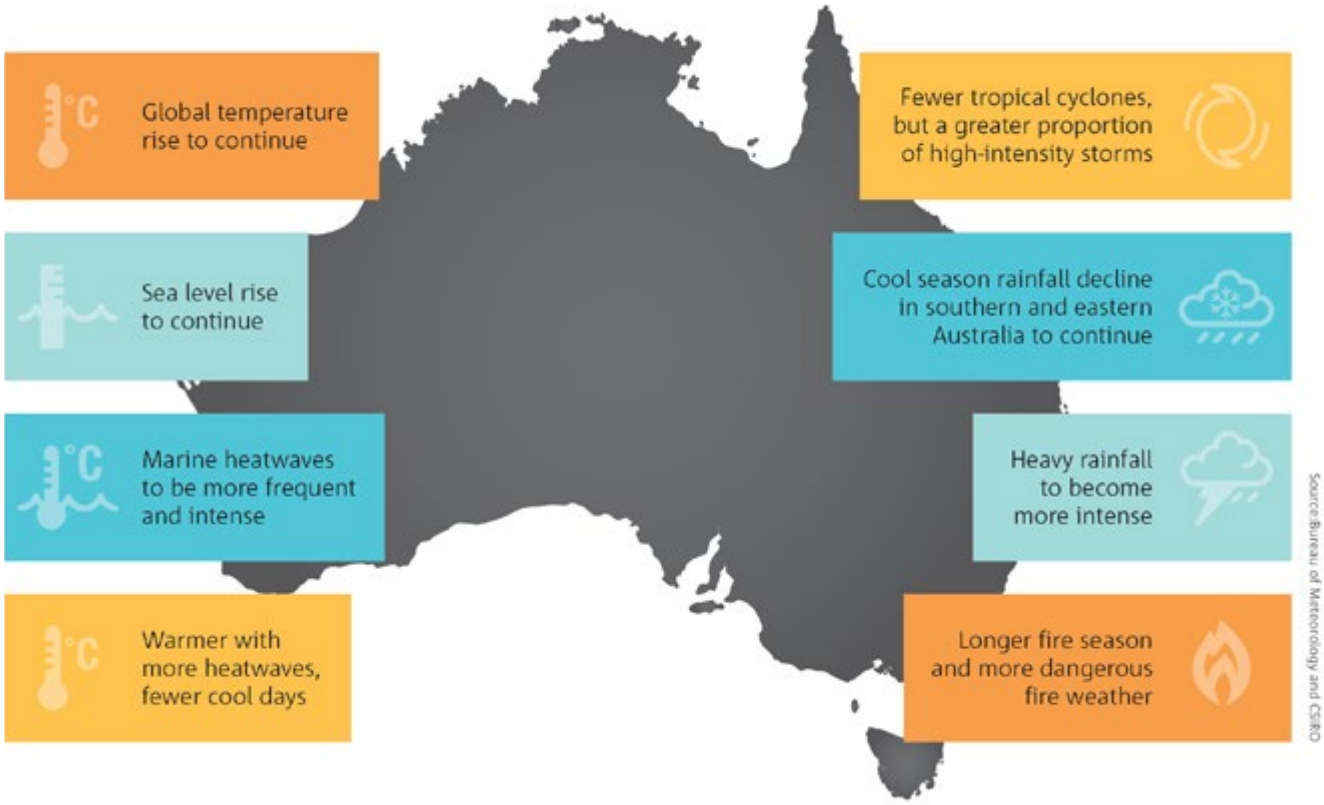
Climate change presents one of the most significant challenges for emergency management due to its profound effects on all aspects of disaster risk and due to the increased levels of uncertainty it brings for risk managers and planners. The following section considers major trends in each of the components of disaster risk, emphasising the cross-cutting and far-reaching impacts of climate change.

*The increasing complexity of disaster risks presents new challenges that could overwhelm the capabilities of our emergency services. Australia's weather and climate agencies have told us that changes to the climate are projected to increase the frequency and intensity of natural disasters, potentially resulting in complex, concurrent and compounding events.*

Royal Commission into National Natural Disaster Arrangements, Binskin et al., 2020, p.154

## Key trends and developments

- The global risk landscape is evolving and will be shaped by the effects of the COVID-19 pandemic for many years to come. As the World Economic Forum's most recent annual Global Risks Report underscores, "The immediate human and economic cost of COVID-19 is severe. It threatens to scale back years of progress on reducing poverty and inequality and to further weaken social cohesion and global cooperation" (World Economic Forum, 2021, p.7).
- Climate change is altering the frequency and severity of many natural hazards and there is close agreement about major impacts up to 2030 between different climate models (see Figure 4). For emergency service organisations, the most immediate and pressing effect of climate change is its impact on natural hazards. However, the exact nature of climate change impacts on natural hazards are uncertain due to the limitations in climate models, the complex mix of processes, conditions and interactions that drive hazard events, and the influence of significant natural variability in many of those processes (Jones et al., 2013).
- Exposure to natural hazards is projected to further increase in some areas of Australia due to population growth, human settlement patterns and climate change, with extreme heat exposure becoming an increasingly significant threat. (Gissing et al., 2018). Exposure of greater numbers of people and assets to extreme heat due to climate change is a trend that has far-reaching ramifications (Rickards & Keating, 2021).
- Root causes of vulnerability are not well understood in Australia, while increasingly interconnected and interdependent support systems increase our vulnerability to cascading disasters. Attention to vulnerability brings into focus the reality that "hazards only lead to disaster if they intersect with an exposed and vulnerable society and when the consequences exceed its capacity to cope" (Australian Government Department of Home Affairs, 2018).
- The potential for compound, catastrophic and cascading disasters in the future is of mounting concern for emergency service organisations and an increasing focus of research (Gissing et al., 2020).




Overview of future climate projections for Australia in the State of the Climate 2030 report (CSIRO and BOM, 2020, used with permission).

**Figure 4**

CHANGING RISK


## Potential implications

- Emergency service organisations are already grappling with the implications of climate change risk and impacts today (AFAC, 2018).
- Projected climate change effects are likely to increase the risk of more severe consequences from natural hazards, putting increasing pressure on the emergency services workforce. Meanwhile, projected rising costs of disasters may further stretch emergency service resources.
- Significantly, the changing disaster risk profile in Australia challenges the sustainability of the current organisational and workforce arrangements for emergency response and recovery management (CSIRO, 2020).
- Ensuring the health, safety and wellbeing of emergency services workers will become a more pressing challenge under climate change. For example, bushfire volunteers responding to longer and more severe bushfire seasons and rising temperatures are likely to face greater fatigue, stress and mental and physical health risks.
- Climate change is also likely to impact the risk mitigation practices of emergency service organisations, for example, longer fire seasons may decrease or alter the windows for prescribed burning. However, there is considerable uncertainty regarding how climate change will affect elements of risk mitigation like conditions for prescribed burning (Clarke et al., 2019).
- Sector-wide collaboration and strategic-level, joint agency planning, and interoperability will be increasingly vital to respond to climate change impacts (Bosomworth, Owen & Curnin, 2017).
- Climate change will challenge the emergency services in more ways than just through its impacts on disaster risk. Interactions with other trends will create second and third-order effects impacting all components of the emergency management sector's operating environment. A key example is rising community expectations on emergency services to confront climate change impacts through mitigation, prevention and preparedness actions (Rickards & Keating, 2021).
- A significant implication of climate change for emergency service organisations is the increased uncertainty and unpredictability of future conditions and events. This in turn increases the importance of methods for planning and decision-making under conditions of uncertainty, such as scenario-based planning (see Riddell, van Delden, Maier & Zecchin, 2020).
- Integrating climate change adaptation and mitigation into emergency management planning, including workforce planning, needs to be prioritised (AFAC, 2018).
- The role that exposure and vulnerability play in amplifying and accelerating the secondary and cascading impacts of triggering hazards has increased calls for a more central focus on vulnerability assessment (Pescaroli & Alexander, 2018, p.2250).
- Improvements in many areas and levels of disaster risk reduction have meant that potential losses and damages from disaster events have been lessened. A national focus on disaster risk reduction may further boost improvements in key areas of risk reduction (Commonwealth of Australia 2018).

## Related research

Significant research has been undertaken to support emergency service organisations to make decisions about risk, and to adapt to and plan for the impacts of climate change under conditions of uncertainty.

- Planning and capability requirements for catastrophic and cascading disasters (Risk Frontiers, Macquarie University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/catastrophic
- Improved decision support for natural hazard risk reduction (University of Adelaide, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/riskreduction
- Mapping and understanding bushfire and natural hazard vulnerability and risks at the institutional scale (Victoria University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/vulnerabilityandrisks
- Preparing emergency services for a climate challenged world (REOS Partners, RMIT University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/understanding-and-mitigating-hazards/8023


Photo: South Australia SES


# CHANGING WORK

In addition to the changing landscape that emergency service organisations operate within, there are also significant changes occurring in the way modern workforces are managed and the organisational contexts of paid and voluntary work. Shifts in these areas will impact the internal environments of emergency service organisations. Following the employee/volunteer lifecycle, we attend to nine important themes within workforce management and organisational change research. We highlight key trends that will present opportunities and challenges alike to workforce planning and capability requirements over the next decade.

The nine themes are outlined in Figure 5. *The Changing Work Literature Review* provides more detail about the trends and developments in the changing work environment highlighted here.

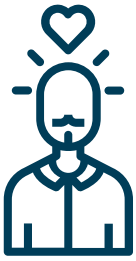

Nine Changing work themes

**Figure 5**

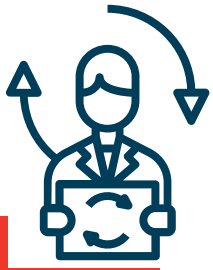
SOCIALISATION AND TRAINING

WORK DESIGN

DIVERSITY AND INCLUSION



MANAGING MENTAL HEALTH AND WELLBEING



CHANGE MANAGEMENT

MANAGING AN AGEING WORKFORCE

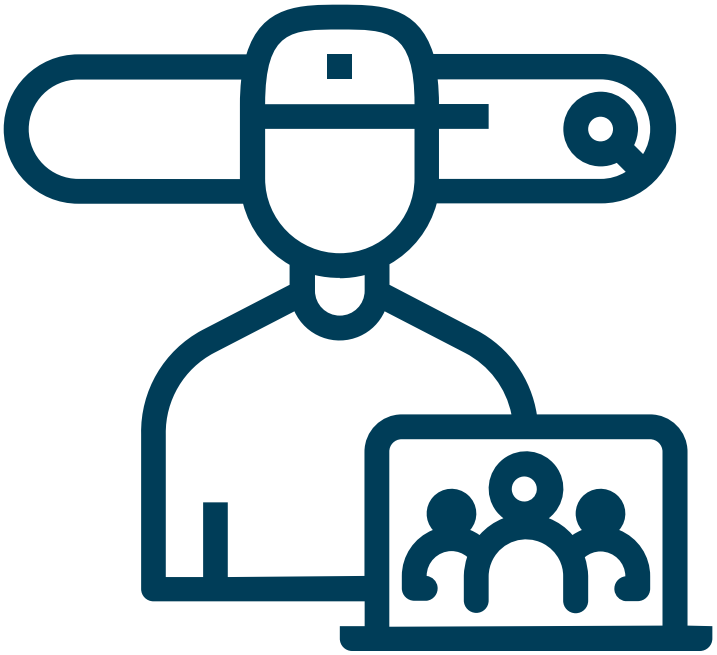
MANAGING VOLUNTEER WORKFORCES

# RECRUITMENT, ASSESSMENT AND SELECTION

With increasing competition for human talent, there is greater recognition of the roles that recruitment and selection play in organisational strategy to achieve competitive advantage (Ployhart et al., 2017). Recruitment refers to any activities or processes that determine how an organisation attracts new prospective members. New members can include volunteers, new applicants to paid roles, or contractors. Recruitment is the feeder into the selection process (Schneider, 1987), which refers to the process by which an organisation decides to extend an offer to a recruit to formally join the organisation. In between is usually an assessment phase that includes any activities or processes that organisations take to understand the characteristics of prospective new members (i.e., the people that were attracted during recruitment). Assessments are undertaken so that prospective members' fit with the organisation, and the role or roles therein, can be evaluated. This is often accomplished by considering the characteristics of the individual in relation to selection criteria, that is, the standards against which a prospective new member is judged when considering whether that new member would fit in the organisation.

## Key trends and developments

- Employer brand, reputation and image are becomingly increasingly important considerations among jobseekers. As such, organisations and talent acquisition professionals are investing heavily in managing their digital footprint to attract talent (Dabirian, et al., 2019).
- Developments in the areas of gamified and virtual reality for immersive assessments are attracting the attention of employers. Alongside applicants' favourable regard for such assessments, these developments have the potential to allow for higher fidelity assessments such as work sample/work simulation tests that are considered gold standard in predicting future job performance (Ployhart et al., 2005).
- Attracting, assessing and recruiting talent presents time and logistical burdens that are ripe for automation.
- It is important not to neglect context and expert judgement as we have yet to fully explore how to optimise the collaboration between human decision makers and artificial intelligence decision aids (such as automated CV screening) (Wilford, 2019).
- There is an increasing focus on using recruitment, assessment and selection strategies to ensure fairness and improving diversity within organisations.
- Under the backdrop of future organisations operating under volatile and complex conditions, there is an increasing focus on holistic approaches to recruitment, assessment and selection, such as aligning recruitment with next stages in organisations ranging from onboarding to good work design, through to employee turnover (Ployhart et al., 2017).



## Potential implications

- Emergency service organisations will increasingly need to consider non-technical skills (situation awareness, decision making, cooperation, coordination, communication, leadership and coping, stress and fatigue management; Hayes et al., 2020) in the recruitment, assessment, selection strategies and through training existing workforce.
- With the competition for talent, there is a need to focus on creating a positive candidate experience and monitoring it over time. This also extends to volunteer selection, where candidate withdrawal may be a greater risk.
- Adoption of a 'command and control centre' model, with remote operations, multi-team systems, real-time data collection and processing will create strong demand for new, specialised skill sets that necessitate an attractive employee value proposition for workers.
- Improving community representation among operational personnel and volunteers will continue to be a need. Recruitment strategies that are sensitive to diversity and representativeness will play an important role.
- More flexible volunteering models have been proposed, but these will require some meditating support from technology.
- Alternative recruitment of volunteers might involve partnering with local employers, who are willing to commit to allocating work time to emergency response and may be able to partner with emergency services to deliver or benefit from training.
- There may be a greater expectation for emergency services in the same geographical locations to align their recruitment practices through digital means.
- Recruitment and selection practices should be connected to other parts of the employee lifecycle (e.g., training, engagement, retention and turnover)
- Social presence, online reputation and brand management is very important. Volunteer groups will need support from their parent organisation in terms of increasing social presence and brand recognition.
- Differences are emerging between applicants and current personnel:
  - Current personnel consist of predominantly white (older; in case of volunteering) males, whereas applicants reflect a more diverse population. This implies a larger gap between recruiters and (potential) recruits.
  - Applicants interested in more flexible opportunities (especially for volunteering, perhaps also for paid).

## Related research

- Recruitment and retention toolkit (University of Western Australia, Curtin University, Department of Fire and Emergency Services, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/driving-change/future-workforce
- Changing management practice (University of Western Australia, Curtin University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/3533
- Valuing volunteers: better understanding the primary motives for volunteering in Australian emergency services (University of Wollongong, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/phd-valuingvolunteers
- Improving the retention and engagement of volunteers in emergency service agencies (University of Wollongong, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/volunteerretention
- Enhancing volunteerism (La Trobe University, Bushfire CRC), see https://www.bushfirecrc.com/projects/d3/enhancing-volunteerism

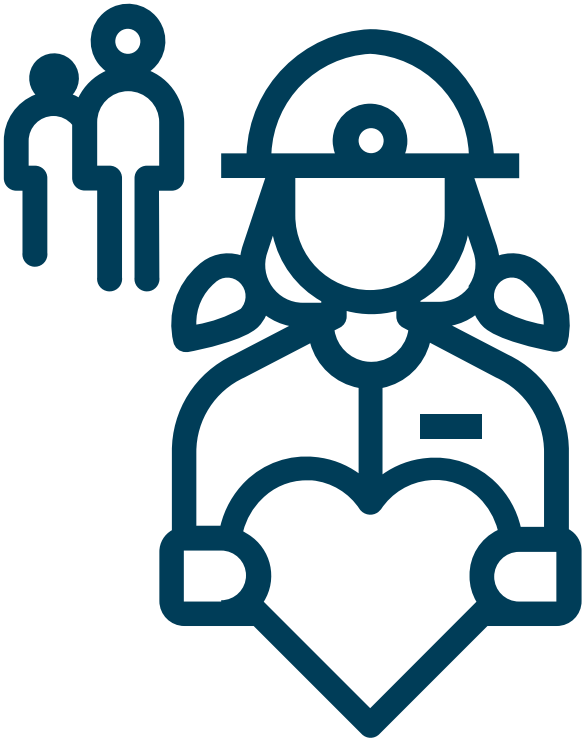
# SOCIALISATION AND TRAINING

Socialisation is the process whereby an organisational 'outsider' (i.e., a non-member), is transformed into an organisational 'insider' (Feldman, 1981, see Figure 6). It is commonly defined as "a process by which an individual acquires the social knowledge and skills necessary to assume an organisational role" (Van Maanen & Schein, 1979, p.211).

At their core, newcomer workplace entry and training are components of human resource management. Organisations can contribute to the socialisation process through human resource practices such as onboarding, training, and influencing newcomers through different socialisation strategies. Research has revealed that the ways in which an organisation integrates newcomers into the organisation can be a significant driver of subsequent attitudes and behaviours. Importantly, ineffective socialisation of new organisational members is a primary source of premature voluntary and involuntary employee turnover (Bauer, Morrison & Callister, 1998). A study found that organisations with a formal onboarding program retain over 90% of new employees as compared to just 30% at organisations without a formal onboarding program (Laurano, 2013). Within the emergency management sector, according to Jones and Berry (2017), emergency service organisations can experience up to 20% volunteer turnover, with approximately 50% of all new recruits leaving within the first two years (Jones & Berry, 2017). This can be highly costly to organisations, thereby pointing to the economic importance of a successful socialisation and training process.

## Key trends and developments

- Newcomers who enter organisations with 'strong' cultures often struggle to be heard until they have accumulated enough visibility and legitimacy in the eyes of their peers. There is an increased recognition and focus, however, on shaping the socialisation process to facilitate newcomers' proactivity, autonomy and encouraging fresh perspectives (Chong et. al., 2020).
- Organisations must strategically balance virtual and face-to-face socialisation and training for optimal learning and internalisation in the age of hybrid and virtual work.
- Rapid onboarding is becoming more prevalent and necessary (Allen et al., 2017). However, we have much more to learn regarding how organisations might best calibrate their socialisation and training strategies to accelerate the socialisation process, while simultaneously providing the necessary engaging, personalised experience for new members of their organisation.
- The increasing virtualisation of work presents significant new challenges for the successful socialisation of new organisational and team members through virtual platforms.

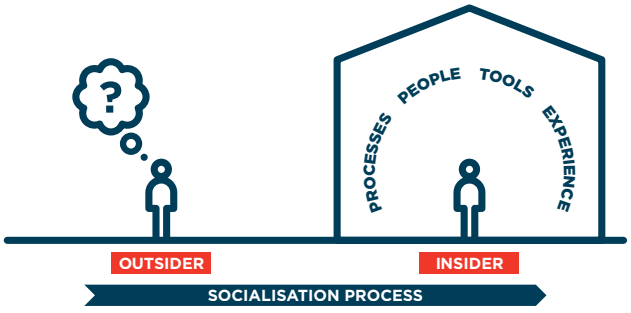


## Potential implications

- The switch to virtual and hybrid work poses new challenges for effective socialisation. Emergency service organisations may need to attend carefully to the social aspects of newcomer adjustment, particularly when virtual socialisation processes become more prevalent, to not neglect new members' development of social capital within their respective organisations.
- There is an increasing need for rapid onboarding of teams in emergency service organisations as virtual teams are constructed 'on the fly' when faced with certain situations. These teams must quickly build a shared understanding of operations and goals, which necessitates a new way of approaching the socialisation process, as people are socialised into their teams rather than larger organisations.
- There is an increasing need for an effective but rapid onboarding process for spontaneous volunteers.
- Emergency service organisations may wish to develop their workforce to have a learning mindset, rather than focusing more classically on task proficiency alone. Over the next decade, emergency service organisations will likely benefit from more practical frameworks and tools to assist with how to develop the emergency service workforce to be adaptive.
- At the same time, skill decay and skills maintenance can present very real challenges to emergency service workforce capability. Emergency service organisations need to consider "the nature of skills, their decay rates and appropriate maintenance schedules", and to do so in the context of changing capability needs into the future (Woodman et al., forthcoming)
- Changes in technology have implications for training, both in terms of its mode of delivery and its content. Continuing to foster the proclivity for continuous learning among the emergency service workforce and providing support for training will be essential for workers to retain job-relevant skills.
- The provision of virtual training has the potential to make training more accessible to the emergency service workforce, provided equipment is available and accessible (e.g., virtual reality set, mock tools).
- Learning new skills is a significant drawcard for the emergency services for attracting and retaining volunteers, which emergency service organisations should continue to leverage.
- Volunteers most appreciate training that they see as relevant and that which allows them to develop personally and professionally (Aitken, 2000). Thus, nuanced (rather than simply 'more') training programs, that are quickly adapted with changes in technology and practice, will be necessary for volunteer retention.
- The ability to transfer training and credentials across jurisdictions remains a concern among volunteers, however, it can be alleviated through review of training systems and pathways to allow the transferability of skills across different roles, and across jurisdictions in different regions or states.

## Related research

- Northern Australian bushfire and natural hazard training (Charles Darwin University, Bushfire and Natural Hazard CRC), see https://www.bnhcrc.com.au/research/hazardtraining




Socialisation transforms organisational 'outsiders' into 'insiders'.

**Figure 6**

SOCIALISATION AND TRAINING

# WORK DESIGN

Work design refers to "the content and organisation of one's work tasks, activities, relationships, and responsibilities" (Parker, 2014). Interest in the topic developed as a result of working practices that emerged during the industrial revolution. At this time, when large numbers of people began to work in factories, Frederick Taylor introduced the idea of scientific management as an efficient way to design work. Under this model, work was broken down into very small tasks, with each small task being allocated to a single worker. The rationale was that it would be easy to train people to do a small task, and then they could perform it with great efficiency. Scientific management also included the notion that workers do the work whilst managers make the decisions. The net effect was that many people ended up with highly repetitive jobs that have very low levels of decision-making autonomy.

It soon became apparent that such work designs had negative effects – including high levels of worker alienation, stress, absence and turnover. In response, theories were developed as to how to design work so that it is more motivating and productive (notably the Job Characteristics Model, Hackman & Oldham, 1976) and less stressful (such as the Demand-Control model, Karasek, 1979). A vast amount of research has subsequently taken place to identify what sorts of work characteristics constitute a positive work design (see Parker, 2014). Work characteristics such as job autonomy, job variety and social support have been shown to protect workers from harm and enhance employee wellbeing, not only reducing mental ill health but also promoting a sense of thriving (Schaufeli et al., 2009). The way in which work is designed also affects employee productivity and retention, thereby resulting in significant financial considerations for organisations.

## Key trends and developments

- Research evidence suggests that work design across the world could be improved significantly. However, it is becoming an increasingly recognised topic within Australia, particularly in the context of psychosocial risks at work.
- The SMART work design model (Figure 7) identifies five key categories of work characteristics that result in meaningful and motivating work that is also healthy: Stimulating, Mastery, Agency, Relational, and Tolerable Demands (Parker et al., 2017).
- Work **redesign** aims to change the nature and organisation of employees' work tasks, activities, relationships and responsibilities (Knight & Parker, 2019), and can be deliberate or induced organically by wider system changes.
- Technology often does not replace whole jobs, but rather tasks. This means we will need to give much more proactive attention to how to design work with both humans and technology.
- Flexible working practices, which are more common since the COVID-19 pandemic, can directly increase employees' autonomy. However, the relational aspects of work (e.g., social support) have been highlighted as critical resources to reduce challenges associated with remote working.
- There is an increasing need to make work sustainable through work design to combat the challenges of demographic ageing.

## Potential implications

- The combined effect of supporting both individual-led and organisation-led strategies are most powerful (Grant & Parker, 2009). Organisation-led work design change can also be complemented by strategies that provide opportunities for employees to redesign their own work, such as via job crafting (Kooij, Tims & Kanfer, 2015) or proactive work behaviour (Kooij, 2015).
- It is important also for emergency service organisations to consider the ways in which they allow and support employees and volunteers to redesign their work.
- Given the vital work carried out by the emergency service workforce, it is important they feel engaged and motivated, yet not overly stressed and burdened. Ensuring that work is SMART is a powerful evidence-based way to achieve these outcomes.
- Ensuring that work is SMART will also reduce psychosocial risks and will ensure that the organisation is complying with health and safety laws.
- The emergency services workforce can be asked regularly about their work design, using the SMART work design assessment.
- Too often, work design issues only get discussed *after* the implementation of technology, whereas humans should always be placed at the centre of technological and social systems at work.
- Principles of good work design are not only applicable to paid employees but also to the volunteer workforce.
- As the number of mature workers amongst the emergency services workforce increases, it will be important to redesign the work, such as by allowing more flexible working or reducing the physical demands, to accommodate the changes that occur as people age.
- To attract and retain mature workers and to promote successful ageing, emergency service organisations need to be willing to redesign work and work contexts to accommodate changes in people as they age. This includes being aware of the antecedents (or factors) that might shape the emergency service workforce's job design, such as through the SMART Work framework shown below (Parker & Andrei, 2020).

## Related research

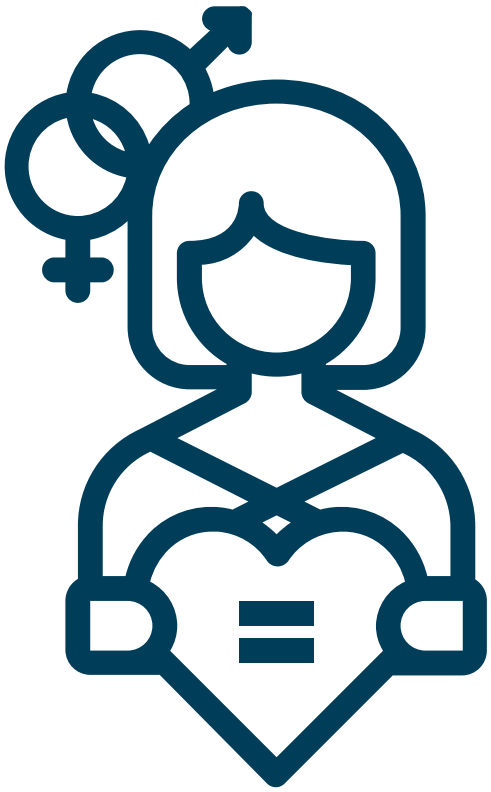
- SES Fit for Task (Human Performance Science, Deakin University, Griffith University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/3932
- Thriving at Work and at Home (Curtin University), see https://www.transformativeworkdesign.com/

| S | M | A | R | T |
|---|---|---|---|---|
| **Stimulating** | **Mastery** | **Agency** | **Relational** | **Tolerable Demands** |
| · Adequate Skill Variety<br>· Sufficient Task Variety<br>· Problem Solving Demands | · Role Clarity<br>· Feedback From Others<br>· Task Identity (Completing a Whole Piece of Work) | · Control Over Scheduling<br>· Control Over Work Methods<br>· Decision Making Control | · Support From Supervisor & Peers<br>· Sense of Task Significance<br>· Perceived Social Worth | · Moderate Time Pressure & Workload<br>· Manageable Emotional Demands<br>· Low Role Conflict |

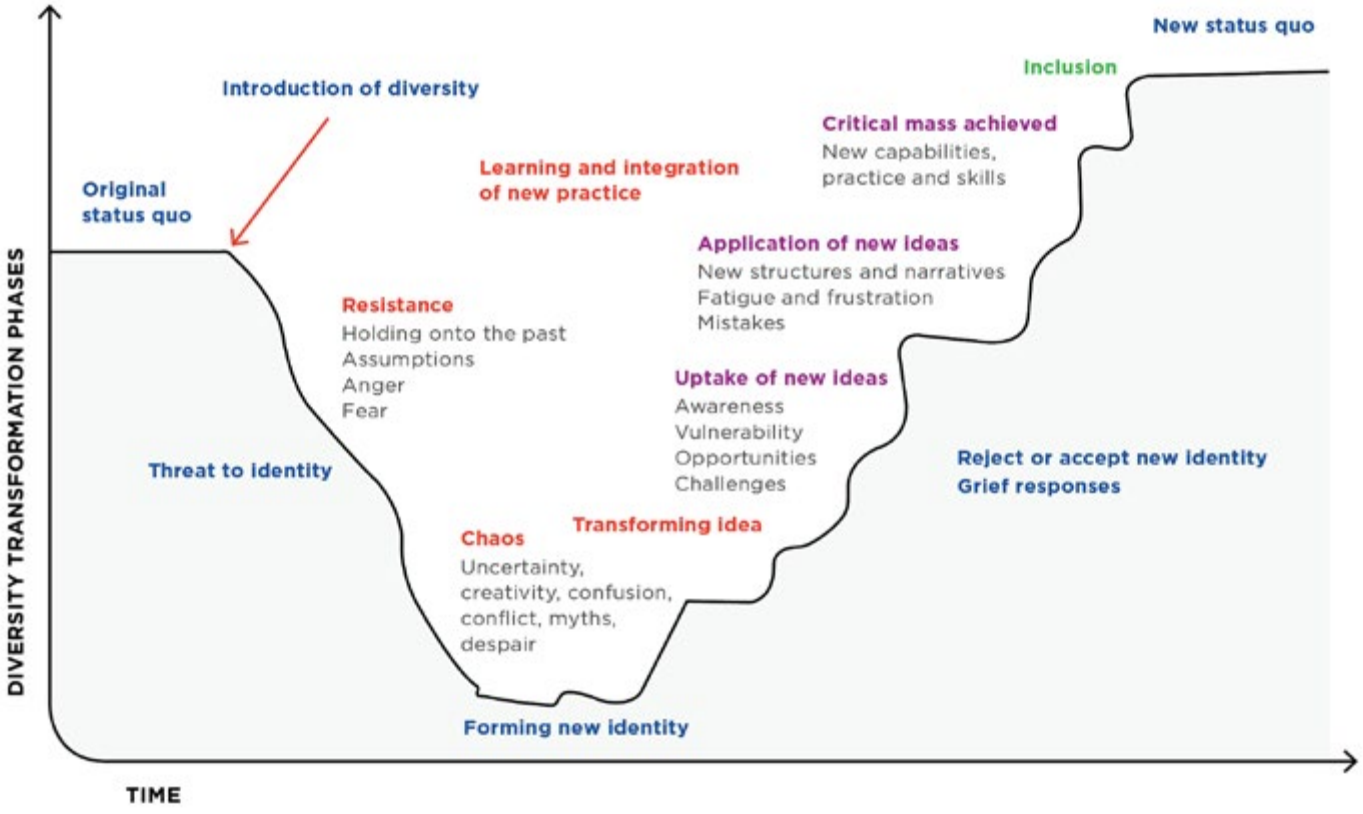
SMART Work Design framework, reproduced with permission from Curtin University.

**Figure 7**

# DIVERSITY AND INCLUSION



Diversity and inclusion are major foci of policy and organisational change within the Australian emergency management sector today. There is strong recognition that the sector needs to better reflect the communities it serves. This section summarises key themes highlighted by two diversity and inclusion researchers. The first focuses on themes in diversity management research within the emergency management sector through the *Diversity and inclusion: building strength and capability* CRC project (see Young et al., 2018, 2021 ; Young & Jones 2019). The second focuses on themes in diversity and discrimination in the workplace, through studies with organisations outside the emergency management sector (Luksyte et al., 2013, 2018).




Phases of the diversity and inclusion transformation process (Young et al., 2018, Figure 1, p.12).

**Figure 8**

*As the fire and emergency sector evolves, changes in climate, technology and workplaces will require a diverse, highly skilled, trained and resilient workforce. The Australasian fire and emergency sector cannot afford to miss out on the skills, ideas and perspectives of a large proportion of the potential workforce, including a diversity of women and others. Ensuring the development and appropriate deployment of the full spectrum of the total talent pool is critical to the growth, competitiveness and future-readiness of our sector.*

Gender Balance in Fire and Emergency – Going Beyond it's the Right Thing to Do (Male Champions of Change Fire and Emergency, 2021, p.7).

## Key trends and developments

### Themes from diversity management research within the sector

- While organisational research on diversity and inclusion is a large and diverse area, there has been an overall shift in emphasis over time from diversity to inclusion, however a focus on both is crucial.
- In addition to being a moral imperative, building diversity and inclusion in the emergency management sector is critical for managing human, social, and innovation risk associated with hazards, which can enhance overall performance and organisational success.
- Benefits of diversity and inclusion address eight key risk areas for emergency service organisations: community, health and safety, operational and service delivery, economic, public safety, reputational, political, and legal and legislative.
- There are central workforce attributes (e.g., empathy, emotional intelligence), skills (listening, reflection), and capabilities (e.g., agility and adaptiveness) that need to be developed to enable diversity and inclusion in the emergency management sector (Young & Jones 2019).

### Themes from diversity management research outside the sector

- Although formal discrimination is legally prohibited, other more subtle and interpersonal forms of discrimination, are still prevalent and influence work experiences of demographically and culturally diverse employees and volunteers.
- The existence and prevalence of prescriptive and descriptive stereotypes, e.g., gender, race and age stereotypes, explain why the same work behaviours displayed by employees from different demographic and cultural backgrounds receive different outcomes.
- Eradicating discrimination and increasing diversity and inclusion requires organisations to integrate the differences of their demographically and culturally diverse employees into all organisational processes and decision making and learn from these differences.

DIVERSITY AND INCLUSION

DIVERSITY AND INCLUSION

# Potential implications

### Themes from diversity management research within the sector

- The structures and cultures of the emergency management sector require transformational change to realise benefits and performance improvements that come with greater diversity and inclusion (see Figure 8).
- Common aspects that support effective diversity and inclusion programs include:
  - safe spaces where difference is welcomed
  - an authorising environment and mandate to operate
  - ensuring leader and practitioners have the appropriate skills and knowledge
  - pragmatic approaches
  - understanding interactions with communities, organisations and institutions
  - the development of narratives that take conversations beyond numbers to connect people through stories (Young et al., 2021, p.9).
- Many of the most important workforce attributes, skills and capabilities needed to support diversity and inclusion implementation are not traditionally emphasised or prioritised in emergency service organisations.
- A practical framework tailored to the emergency management context has been developed to help organisations better manage and measure diversity and inclusion programs and activities and to build more diverse and innovative work cultures for the future (Young & Jones, 2020).

### Themes from diversity management research outside the sector

- It is critical to increase awareness amongst managers of the prevalence of stereotypes and of their potential impact on decisions and subsequent important employment outcomes. It is also critical to talk about these stereotypes and ways to proactively address them with the wider workforce, so that employees and volunteers become more aware of these stereotypes and where and how they operate.
- There is a need to implement actionable steps that reinforce climates of inclusiveness in emergency service organisations and to ensure that women, younger members and members from diverse cultural backgrounds are integrated into decision-making and nominated for leadership positions. Reasons why women and younger members may be less likely than older men to be attracted to the emergency services include: role stereotypes or assumptions, limited awareness around how technology could make tasks more accessible, limited awareness around the breadth of roles available, and stereotypes around emergency service culture.
- It is important to increase awareness of the stereotypes of a prototypical emergency services member and proactively challenge them during all the processes of working.
- In the future, there is a need to better balance directive (e.g., crisis driven, command and control) leadership styles with more inclusive leadership styles.

# Related research

- Diversity and Inclusion: building strength and capability (Victoria University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/diversityinclusion
- Indigenous initiatives research projects (Charles Darwin University, North Australian Indigenous Land and Sea Management Alliance, Deakin University, Western Sydney University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/driving-change/indigenous-initiatives

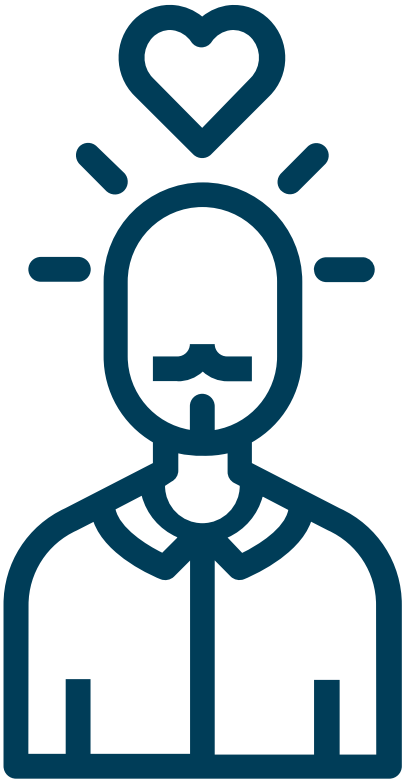
# MANAGING MENTAL HEALTH AND WELLBEING

Mental illness and ill-health are increasingly important topics of concern within workplaces. It is estimated that at any one point in time, one in six working age people will be suffering from mental illness (most commonly depression and anxiety), with a further one in six suffering from symptoms associated with mental ill-health (e.g., worry, sleep problems, fatigue) affecting their ability to function at work (Harvey et al., 2014). Mental illness has become the leading cause of sickness, absence and long-term work incapacity in Australia, and is one of the main health-related reasons for reduced work performance (Harvey et al., 2014). Economic analyses estimate the cost of mental health conditions to Australian businesses to be between $11 to $12 billion dollars each year through absenteeism, reduced work performance, increased turnover rates and compensation claims (National Occupational Health and Safety Commission, 2003; LaMontagne et al., 2011).

Whilst the academic study of the impact of workplace factors on mental health is not new (see e.g., Parker et al., 2017), following rising workers' compensation claims, a series of public reviews (e.g., Boland, 2018; Productivity Commission, 2020), commissioned reports (e.g., Harvey et al., 2014), and national studies (Dollard et al., 2012), there has been increasing public awareness that workplaces can play an important and active role in worker mental health – not only to support workers experiencing ill-health, but also in maintaining and promoting the mental health and wellbeing of their workers.

## Key trends and developments

- There is increasing public awareness of the links between mental health and work, which in turn is requiring organisations to respond. Many organisations have been forced to prioritise not only members' physical health, but also worker mental wellbeing as a matter of business survival.
- There are shifting perspectives around supporting workplace mental health with a move occurring away from individual, reactive approaches towards systemic, integrative, holistic and proactive approaches.
- Technological advancements are both helping and hindering workers' mental health and wellbeing by transforming how we work (e.g., removing routine work tasks, yet increasing demands) and where and when we work (e.g., greater autonomy yet increased work-home interference).
- An increased integration of physical, physiological and psychological data in the future are likely to capture broader ranges of work stressors and strains. In response, organisations are expected to become better equipped with more time-sensitive data to monitor and recognise signs and symptoms of stress.

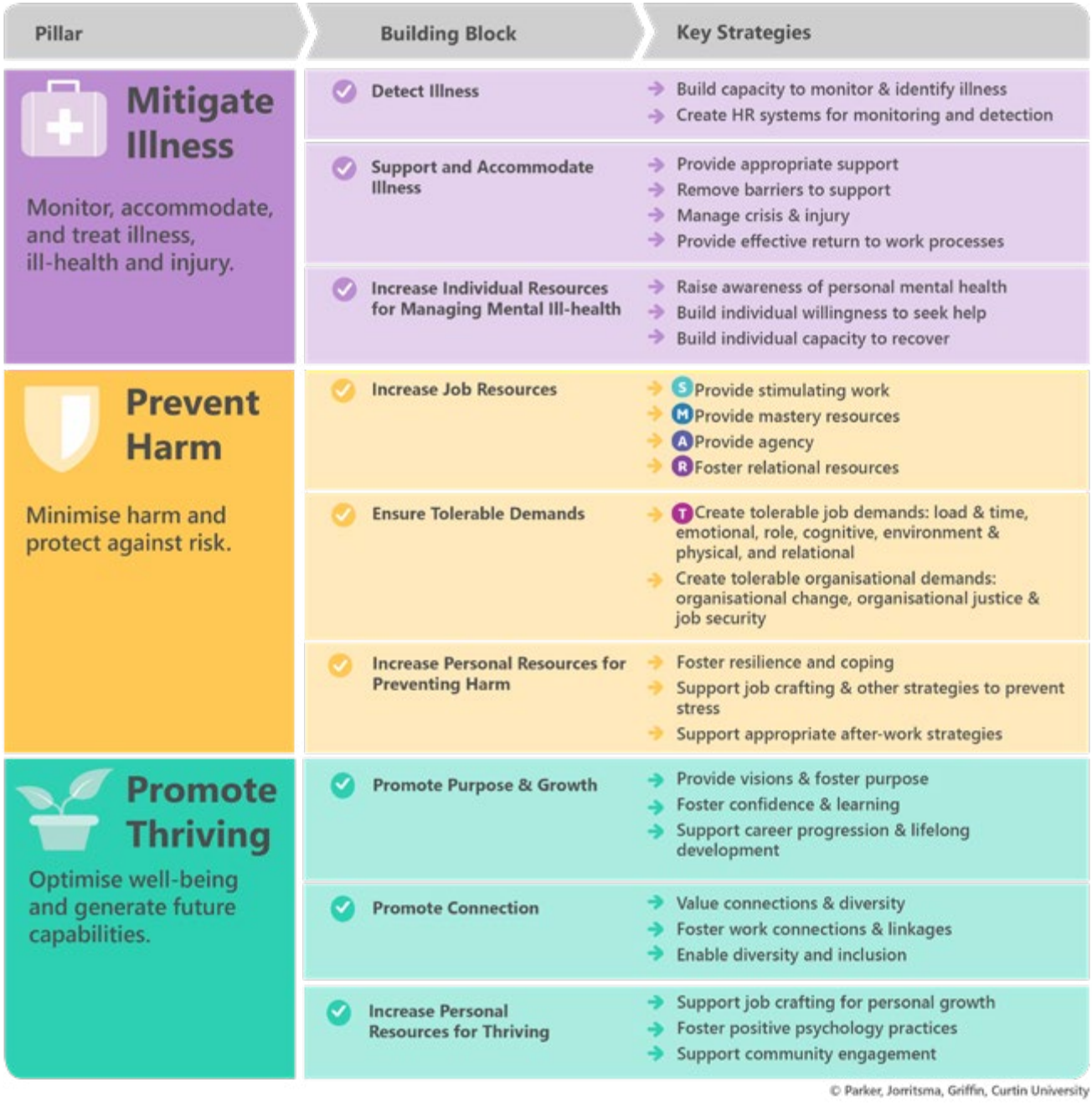


## Potential implications

- There will be an increasing need for emergency service organisations to understand and prevent psychosocial risks within the workplace, include deeper-dive considerations from a wider systems and preventative perspective such as work design and psychosocial safety climate in the workplace.
- Changing technology also has workplace mental health and implications for the emergency service workforce, as work becomes increasingly complex and interconnected. It is imperative when developing or modifying work systems to include workers' mental health and wellbeing as a primary consideration.
- Emergency service organisations can target mental health interventions at all levels:
  - Using an evidence-based framework (e.g., Thrive at Work, see https://www.thriveatwork.org.au), organisations can adopt an integrated, strategic and proactive approach to addressing mental health in the workplace (see Figure 9).
  - Work redesign and interventions to encourage social support among team members can be applied at the team and role levels.
  - Resilience training has been shown to improve personal resilience and represents a useful means of developing mental health and subjective well-being in employees (Robertson et al., 2015).
- Supportive and inclusive workplace cultures that enable regular discussions about work-related experiences and which effectively manage the emotional demands on personnel have lower rates of post-traumatic stress disorder and psychological distress. Moreover, poor workplace practices and culture can be as debilitating for the emergency service workforce as is exposure to trauma.
- Emergency service organisations could consider hiring cognitive, organisational and human factors psychologists in their workforce to design and implement initiatives which promote more 'mentally healthy' use of technology at work.
- As the competition for talent intensifies, to remain attractive to potential employees and volunteers, it may be beneficial for emergency service organisations to incorporate relevant workplace mental health strategies as part of their recruitment campaign.
- Many individuals do not know what types of emotional or behavioural symptoms may indicate mental health issues, when to seek help, and what types of help are effective for different types of conditions. Self-stigma associated with mental health also appears to be an ongoing issue. "*Providing evidence-informed education and access to resources for all personnel, that focus on addressing mental health literacy should be a key consideration by all police and emergency service agencies. This should focus on increasing the understanding of the signs and symptoms of mental health conditions and strategies to protect mental health and enhance wellbeing across the career life cycle.*" (Beyond Blue Ltd, 2018 p.185).

## Related research

- National mental health and wellbeing study of police and emergency services (University of Western Australia, Roy Morgan Research, Beyond Blue, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/3403
- Maintaining positive mental health and wellbeing for young adult emergency service volunteers (University of Adelaide, Flinders University, University of Western Australia, University of British Columbia, Hospital Research Foundation, AFAC, Military and Emergency Services Health Australia, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/6884




The Thrive at Work Framework, reproduced with permission from Curtin University.

**Figure 9**

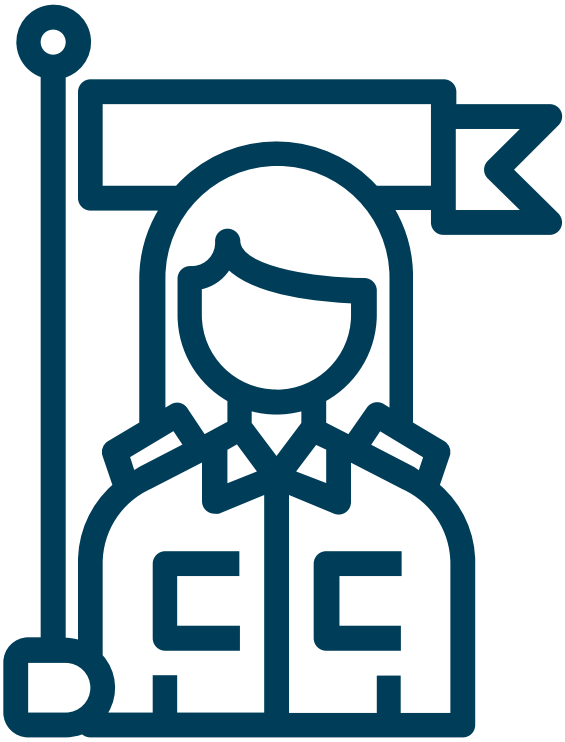
# LEADERSHIP

Leadership refers to "the ability to influence, motivate, and enable others to contribute toward the effectiveness of the organisations of which they are members" (House et al., 2001). AFAC postulates that some of the key functions of leaders in emergency management organisations are: sustaining a clear vision and consistent strategy, understanding interconnectedness and how this informs strategic planning, being visionary while being pragmatic and acting locally while thinking globally (AFAC, 2017).

A major challenge for emergency management leaders is maintaining effectiveness across different contexts—day-to-day operations, routine emergency response, extreme events—and different stakeholders—employees, volunteers, community members, etc. Emergency management leaders are facing ever more complex demands, including larger disasters and growing complexity of social, technical and infrastructure systems (Owen et al., 2015). These growing demands and requirements call for emergency management leaders who embrace empowering, collaborative and participative leadership behaviours (Cherry, 2014). Further to this, emergency management leaders should develop capacity to operate in different modes – directive versus empowering – depending on the context and the stakeholders. Importantly, adaptive leadership transcends the capabilities of individuals alone, rather it is the product of interaction, tension and exchange (Lichtenstein et al., 2006).

## Key trends and developments

- In addition to technical challenges requiring known solutions, there is an increasing level of adaptive challenges and extreme contexts requiring non-technical skills and adaptive leadership.
- Effective volunteer leadership is essential for retaining a volunteer workforce and to manage its diversity.
- There is an increasing need for leadership development to focus on advancing capabilities that endure over time and continuously evolve to adapt to the changing environment.



## Potential implications

- Emergency service organisations should focus on developing adaptive leadership capacity at all levels of the organisation by training leaders to operate in a variety of different context and situations. Hayes and colleagues' (2020) non-technical skills framework for emergency incident management teams includes seven skill categories (communication, coordination, cooperation, decision-making, situation awareness, leadership and coping, stress and fatigue management). These categories can be further delineated into 16 elements and 44 behavioural markers to equip the emergency service workforce and leaders with – technical skills and to be adaptive.
- Emergency service organisations should engage in extensive collective training and simulation to continuously maintain and enhance leaders' preparedness for operating in extreme contexts (Hannah et al., 2009).
- Leadership development programs for emergency service leaders must build capacity in critical reflection and in critical thinking to allow participants to examine the cultures and structures in emergency service organisations (Owen et al., 2015).
- Volunteer leaders should promote feeling of competence among female volunteers by offering ample opportunities to master difficult tasks in training sessions, with sufficient feedback and guidance (Muhammad Farid et al., 2020).
- Volunteer leaders should be more supportive and encouraging of younger volunteers, while providing more structure and direction to older volunteers, thus addressing the unique motivations and expectations (Kragt et al., 2020).
- Rising expectations and needs of leaders present challenges for training and supporting leaders who are volunteers and may require change in the way volunteer leadership roles are structured.

## Related research

- Developing leadership to retain volunteers in emergency service organisations (PhD project, University of Wollongong), see https://www.bnhcrc.com.au/research/resilience-hazards/2459
- The impact of leadership development on organisational citizenship behaviour and social capital: an intervention using self-determination theory (PhD project, University of Wollongong), see https://www.bnhcrc.com.au/research/valuingvo
- Improving decision-making in complex multi-team environments (CQ University), see https://www.bnhcrc.com.au/research/multiteamenvironments

LEADERSHIP

# CHANGE MANAGEMENT

Change management is "the process of continually renewing an organisation's direction, structure and capabilities to serve the ever-changing needs of external and internal customers" (Moran and Brightman, 2001, p.111). Organisations are subjected to pressures for change from many forces. Examples of forces of change include people (e.g., changing demands for training and upskilling, work arrangements and benefits, compensation systems), technology (e.g., new products and systems, increasing data) and competition (e.g., global competition, lowering costs). Organisations undergo two types of changes: planned and unplanned changes (AHRI, 2021). As the name suggests, unplanned changes are often unpredictable and can occur due to ad-hoc events, such as natural hazards or as a recent example, the COVID-19 pandemic. Organisational development is the process of planned change and improvement of organisations through the application of knowledge of the behavioural sciences.

Managing change within an organisation can be a challenging and delicate process to execute. Indeed, change-management research suggest that organisational change initiatives fail more often than they succeed (e.g., Jarrel, 2017; Meaney & Pung, 2008). Many failings are attributed to the failure of organisational members to adopt and maintain necessary behaviours. Organisational members react differently to change, taking different forms of commitment that manifest in different levels of support for organisational change initiatives. Herscovitch and Meyer (2002) conceptualised individuals' commitment to organisational change along a continuum of five categories:

- **Active resistance:** demonstrating opposition in response to a change by engaging in overt behaviours that are intended to ensure that the change fails
- **Passive resistance:** demonstrating opposition in response to a change by engaging in covert or subtle behaviours aimed at preventing the success of the change
- **Compliance:** demonstrating minimum support for a change by going along with the change, but doing so reluctantly
- **Cooperation:** demonstrating support for a change by exerting effort when it comes to the change, going along with the spirit of the change and being prepared to make modest sacrifices
- **Championing:** demonstrating extreme enthusiasm for a change by exerting effort when it comes to the change by going above and beyond what is formally required to ensure the success of the change and promoting the change to others

Crafting effective responses and the successful management of change is crucial to emergency service organisations as organisations face complex and uncertain operating conditions from external forces (increasingly unpredictable and frequent disasters) as well as internal forces (continuously evolving work environments such as introduction of technology and workforce planning).

## Key trends and developments

- There are many models and programs available for change agents to adopt to instigate change. Given the extensive time and resources required for change management, it is imperative that organisations turn to evidence-based recommendations related to the diagnosis, preparation, implementation, evaluation and institutionalisation of change.
- Self-efficacy, meaning and belongingness are key psychological mechanisms that facilitate the adoption and maintenance of organisational change.
- Leaders act as important 'champions of change' in change management initiatives, particularly during the preparation and implementation phases.
- Accessing and acting on real-time insights can support effective decisions based on an understanding of what the workforce is capable of in the future. As such, organisations can leverage technology for data-driven decision-making during organisational change, including monitoring, measuring and evaluation of change.
- Given that technology is increasingly embedded in the process of organisational change, or represent instigators of change itself, it is critical for organisations to manage organisational members' attitudes toward technology.
- There is an increasing need to invest in organisational resilience for an increasingly disruptive and uncertain future. Organisations need a workforce development approach that considers the dynamic nature of work and the equally dynamic potential of the workforce to reinvent itself, if empowered and supported to do so.

## Potential implications

- Technology is often a driver of organisational change. Its perceived usefulness and ease of use are important influences on whether individuals will adopt the technology. As technological changes become increasingly prevalent, emergency service organisations may achieve faster adoption if the benefits of the change are clear and the change is easy to incorporate into workflows.
- It is important for emergency service organisations to consider system-wide implications when implementing changes or embedding technology within jobs (including volunteers) to ensure goal alignment between all levels of the organisation: high-level strategy to unit and team goals, to individual employee and volunteer goals.
- In implementing any change initiative and considering change practices, it is critical to consider the implications of the changes for organisational members' perceptions of self-efficacy, meaning and belongingness.
- Change-related uncertainties may be best addressed by different communication sources. Direct supervisors are most important for implementation-related and job-relevant information during change, whereas strategic information may be best communicated by senior management (Allen et al., 2007)
- Emergency service organisations may wish to train or select leaders that are transformational, authentic, or those that have referent power to lead a change initiative. For example, transformational leadership is useful to help people understand the 'what' and 'why' of the change, and for providing empathy (Huy, 2002). Accordingly, when seeking to change, emergency service organisations may wish to provide training to leaders to be, or select change agents that are already, admired and respected, inspire followers through a vision, stimulate innovation and those that support individual followers' needs (Bass & Avolio, 1989).
- Some evidence suggests that supportive leadership and role modelling from senior management are essential in enhancing the credibility of change in stereotypically masculine or hierarchical organisations settings (Muller et al., 2009). Over the next decade, emergency service organisations will likely face the challenge of how to facilitate an adaptable workforce to be an adaptable organisation that supports rapid change effectively.
- With increasing, unprecedented disruption and uncertainty in the future, it is important for emergency service organisations to increase their capacity to successfully respond to change and disruption to thrive.

# MANAGING AN AGEING WORKFORCE

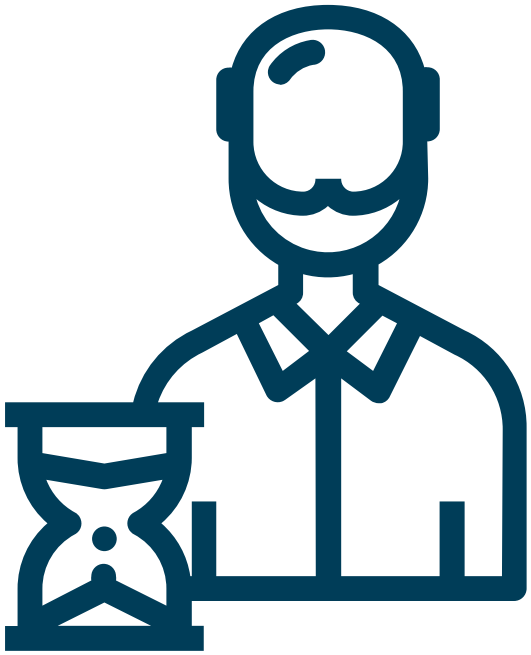
Population ageing remains one of the most important challenges of the 21st century. Australia is experiencing demographic changes (see 'Demographic Changes', page 14) which are contributing to the ageing workforce in all industries. The proportion of workers aged 55 and above has doubled since the 1990s to reach almost 20% in 2018 (ABS, 2018) and as our population continues to age, this proportion will also continue to rise. The definition of older or mature workers varies across context, disciplines and cultures. Within workplace ageing research, older workers tend to mean those who are "approaching retirement age and those who may be working a bit beyond the standard retirement age" (Truxillo et al., 2015, p.353), while the Australian Bureau of Statistics considers individuals aged 45 years and above as mature workers (ABS, 2005). According to the Parliament of Australia (Thomas & Gilfillan, 2018), labour force participation has increased significantly because of:

- generally improved health of older Australians
- the availability of more flexible and less physically demanding forms of employment which have been used by some older Australians to transition to retirement
- the extended period of economic growth in Australia from the mid-1990s to the global financial crisis of mid-2007 to 2009, which created job opportunities for older people
- decisions to remain in employment longer, which have been influenced by the combination of a slowing in growth of superannuation balances following the impact of the global financial crisis and various measures introduced by successive governments to increase older worker retention.

As Australians increasingly work to older ages, employers face the challenge of adapting to an older workforce. Research suggests three broad approaches for organisations to effectively manage a mature workforce and reap the benefits associated with an increasingly age-diverse workforce: include, individualise and integrate (Parker & Andrei, 2020). "Include" refers to organisational strategies to create an inclusive climate such that mature workers feel welcomed and fairly treated; "individualise" refers to organisational strategies to design and adapt work to meet the individual needs and preferences of an ageing workforce; and "integrate" refers to organisational strategies aimed at capitalising on increased diversity by stimulating information elaboration and knowledge exchange processes, such as mentoring schemes.

## Key trends and developments

- Many still hold negative stereotypes about mature workers, even though research suggests that these stereotypes are inaccurate.
- It is in organisation's best interest to reduce negative bias against older workers and to create an inclusive climate to help mature workers feel welcomed and fairly treated.
- There is increasing evidence of the effectiveness of work design (or redesign) as a strategy to promote successful ageing in the workplace.
- An age-diverse workforce that is properly managed increases human capital in terms of knowledge, skills and abilities.



## Potential implications

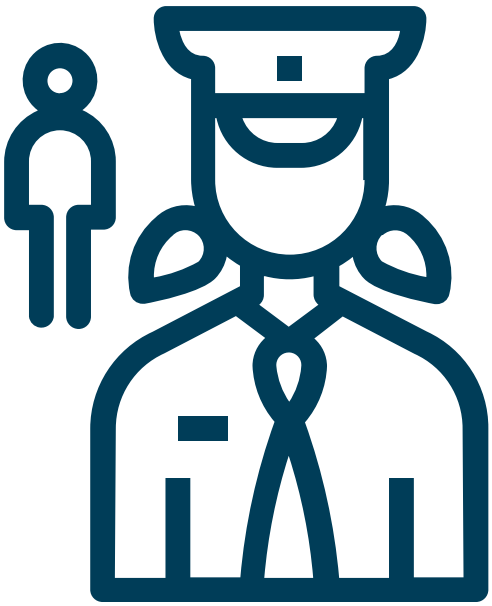
- Emergency service organisations may wish to carry out a forecast of their workforce age structure. A period between five to ten years may be helpful to make realistic assumptions and reveal the age structure of the workforce and its expected development by 2030.
- Strategy development is important to formalise priorities and targeted outcomes in successfully managing an age-diverse workforce, such as attraction and retention strategies, improved knowledge sharing, fewer injuries and compensation claims.
- As workforce ageing and difficulties in attracting workers and volunteers continues, one avenue of addressing future labour shortage is for emergency service organisations to develop talent pipelines by starting their recruitment strategies earlier with younger workforce or volunteers.
- Emergency service organisations may wish to train and develop supervisory behaviours that support mature workers, such as effective task allocation and the fostering of a positive age diversity climate.
- Emergency service organisations may wish to adopt a proactive rather than reactive approach to manage their diverse workforce, such as using the Include, Individualise, and Integrate model discussed above. Example interventions for each theme include:
    - Include: facilitating positive climates for age diversity and reducing bias across organisations, such as through inclusive HR practices, leadership training and dissemination of information to increase awareness throughout the organisation
    - Individualise: optimising mature workers' performance via increased fit between person and job, such as work design/ redesign, facilitating job crafting and proactive career behaviours and offering flexibility in terms of works, contracts, and alternative career pathways
    - Integrate: mentoring schemes to allow for transfer/preservation of key organisational knowledge and expertise from experienced and mature workers to younger workforce, as well as increased knowledge sharing practices through team design and reverse mentoring.
- Mature workers have a higher susceptibility to extreme physical work conditions such as those encountered by field emergency service workers and volunteers, which may stress a person's resources and require more time to recover from a stressful event (Hedge & Borman 2012). As such, emergency service organisations need to think proactively to minimise these higher risks, such as through work redesign and account for the longer times needed for certain groups of their workforce to recover from duties and injuries (e.g., through employee assistance programs or insurance systems)
- To capitalise on strengths of an age-diverse workforce, emergency service organisations must increasingly be willing to redesign work and the work context to accommodate changes in their workforce as they age (i.e., conduct work design interventions; see 'Work Design', page 38 and 'Change Management', page 48).
- Work adjustments need also to cater for individual differences within mature workers/ volunteers as people do not all change in the same way as they age (Fisher et al., 2017).
- A consideration of the target audience, training context and transfer environment is important to develop an age-inclusive training. In relation to older workers, research suggest that framing training as an intrinsic benefit, as well as tying content to be learned to a similar domain as that of the individuals' prior knowledge or experiences are beneficial to older workers.
- Given the established link between age and safety outcomes (Ng & Feldman, 2008), emergency service organisations may wish to involve older workers in supporting the safety of younger workers, such as through training and mentoring programs which also takes advantage of and increases inter-generational interactions.
- Consideration should be given to limiting nonstandard shifts that cause sleep disturbance which could be beneficial to older workers (Blok & de Looze 2011) who are out in the field (e.g., firefighters during bushfire season).
- Older workers should not simply be reassigned to desk jobs that require little physical effort as there are also risks associated with sedentary work for mature workers (Sharit & Czaja, 2012).
- As technology advances, there should be a consideration of how to adapt technology to fit an age-diverse workforce rather than only focusing on adapting workers to technology.

# MANAGING VOLUNTEER WORKFORCES

Other sections of this report look in more detail at what research tells us about effective volunteer workforce management practices across various stages of the volunteering lifecycle. This section adopts a broader human resource management perspective on managing volunteer workforces within public and not-for-profit mission-driven organisations. It considers major external and organisational contexts impacting on the processes and outcomes of human resource management practices for volunteer workforces in these organisations, and how management approaches for volunteer workforces differs from those for employees.

## Key trends and developments

- Shifts in external and organisational contexts have made volunteer management more complicated. These shifts include changes in volunteering, increasing influence of multiple external stakeholders, differences between volunteers and paid staff, and impacts of professionalisation and managerialism.
- There is growing recognition of differences between volunteers and paid employees from a human resource management perspective. Key areas where volunteers and employees are found to differ from a management perspective relate to "values, function, benefits, contractual situation, training and lines of responsibility" (Kappelides & Johnson, 2020, p.9). Importantly, these differences can cause tensions and conflict between paid staff and volunteers.
- Professionalisation and managerialism have mixed and complex impacts on volunteering and human resource management of volunteer workforces that are not yet completely understood. While professionalisation has led to improvements in service quality and safety, it has also led to "an ever-increasing avalanche of administration, compliance, occupational health and safety, risk management tasks, competitive tendering, fundraising and obligatory reporting and paperwork" (Warburton et al., 2013, p.800) for volunteers and volunteer managers. This creates potential for a breach of psychological contract to occur, in which the expectations that volunteers have of organisations are undermined leading to a violation of trust.



## Potential implications

- Care needs to be taken with using mainstream human resource management practices in the volunteering context, which need to be tailored for specific organisational and volunteering contexts. Differences between volunteers and employees have implications for management practices, with some standard employee human resource management practices less likely to be effective with volunteers.
- Management practices for volunteers need to emphasise the provision of non-monetary, symbolic support, such as recognition and appreciation, and a supportive social network. Research also emphasises the need for "a differentiated view" of volunteer coordination, "allowing for different types of volunteer management" and more ''vocation-based, networked, and collaborative'', "home-grown and value-based, and non-formalized" approaches (Studer & von Schnurbein, 2013, p.410).
- The most effective management practices for volunteer workforces balance the need for management with flexibility and emphasise more relational rather than transactional approaches. There is a management tension between the need for well-planned and effective human resource management practices and the need to meet volunteer expectations: "Informal but safe practices may best match volunteer expectations and provide the best approach for sustaining volunteers" (Stirling et al., 2011, p.333-34).
- More transformational leadership styles are important for managing tensions between management needs and volunteer expectations: "the emphasis that transformational leaders place on communication, innovation and mission outcomes are likely to create an environment in which employees are less sensitive to rules that are classified as red tape" (Knies & Leisink, 2018).
- Like other volunteer-involving organisations, emergency service organisations need to ensure that they actively manage relationships between volunteers and paid staff.
- All of the above reinforces the importance of emergency service organisations ensuring that volunteer coordinators and managers, both paid and volunteer, are well supported and their skills for supporting volunteers are developed.
- While knowledge of effective and supportive human resource management for volunteers has grown recently, there remain many areas where further knowledge is needed. These include, for example, the extent to which standard human resource management practice applies to the volunteering context, how practices can be designed to balance management control and volunteer autonomy, how mediating factors like organisational culture influence the effectiveness of management practices and volunteer responses to them, and the major triggers for psychological contract breaches. There is also a need for more research on factors impacting on the experience and management of public sector volunteering in contrast to not-for-profit sector volunteering.

### Related research

- Enhancing volunteerism (La Trobe University, Bushfire CRC), see https://www.bushfirecrc.com/projects/d3/enhancing-volunteerism
- Changing management practice (University of Western Australia, Curtin University, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/resilience-hazards/3533
- Valuing volunteers: Better understanding the primary motives for volunteering in Australian emergency services (University of Wollongong, Bushfire and Natural Hazards CRC), see https://www.bnhcrc.com.au/research/phd-valuingvolunteers
- Diversity and inclusion: Building strength and capability (Victoria University, BNHCRC), see https://www.bnhcrc.com.au/research/diversityinclusion

# REFERENCES

## Introduction


AIDR. (2017). Australian disaster resilience handbook 12: Communities responding to disasters: Planning for spontaneous volunteers. Melbourne: Australian Institute of Disaster Resilience.

COAG. (2011). National strategy for disaster resilience: building our nation's resilience to disasters. Canberra, ACT: Council of Australian Governments.

Commonwealth of Australia. (2018). National disaster risk reduction framework. Canberra: Department of Home Affairs.

Commonwealth of Australia. (2019). Chapter 9: Emergency services for fire and other events. Report on government services. Canberra: Productivity Commission.

Maier, H. R., Guillaume, J. H. A., van Delden, H., Riddell, G. A., Haasnoot, M., & Kwakkel, J. H. (2016). An uncertain future, deep uncertainty, scenarios, robustness and adaptation: How do they fit together? Environmental Modelling & Software, 81, 154-164.

Young, C., & Jones, R. N. (2016). Owning the future: Risk ownership and strategic decision-making for natural hazards. Australian Journal of Emergency Management, 31(4), 16–23.


## The changing landscape

### Demographic change


ABS. (2018). Population projections, Australia. Australian Bureau of Statistics. https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release

ABS. (2019). Historical population (reference period: 2016). Australian Bureau of Statistics. https://www.abs.gov.au/statistics/people/population/historical-population/latest-release.

Davies, A., Lockstone-Binney, L., & Holmes, K. (2018). Who are the future volunteers in rural places? Understanding the demographic and background characteristics of non-retired rural volunteers, why they volunteer and their future migration intentions. Journal of Rural Studies, 60, 167-175.

Foster, H., Whittaker, J., Handmer, J., Lowe, T., & Keating, A. (2013a). Regional Victoria in 2021: changes and implications for the emergency management sector. Australian Journal of Emergency Management, 28(2), 51-55.

Foster, H., Whittaker, J., Towers, B., & Handmer, J. (2013b). Metropolitan Melbourne in 2021: Changes and implications for the emergency management sector. Australian Journal of Emergency Management, 28(4), 9–14.

Holmes, K., Davies, A., Lockstone-Binney, L., O'Halloran, M., & Ong, F. (2019). The social and economic sustainability of WA's rural volunteer workforce. Perth: Bankwest Curtin Economics Centre

Warburton, J., & Peel, N. M. (2008). Volunteering as a productive ageing activity: Evidence from Australia. China Journal of Social Work, 3 (2-3), 301-312.

Winterton, R., & Warburton, J. (2014). Healthy ageing in Australia's rural places: the contribution of older volunteers. Voluntary Sector Review, 5, 181–201.

Ziersch, A. M., Baum, F., Darmawan, I. G. N., Kavanagh, A. M., & Bentley, R. J. (2009). Social capital and health in rural and urban communities in South Australia. Australian and New Zealand Journal of Public Health, 33(1), 7–16.


### Changing nature of work


Bearman, C. (2013). Key technology-related human factors: issues of introducing new technology. In Bearman, C., Naweed, A., Dorrian, J., Rose, J., & Dawson, D. (Eds.). Evaluation of rail technology: A practical human factors guide (pp9-22). Aldershot, UK: Ashgate.

Ikin, H., Carse, T., & Riley, M. (2019). The changing nature of work. APS InPsych, 41(2).

National Research Council. (1999). The changing nature of work: Implications for occupational analysis. National Academic Press.

World Bank. 2019. World development report 2019: The changing nature of work. Washington, DC: World Bank.

### Changes in volunteering

Biddle, N., & Gray, M. (2021). Volunteering during the first year of COVID (April 2021). Canberra: ANU Centre for Social Research and Methods & Volunteering Australia.

CIRCA. (2016). Giving and volunteering in culturally and linguistically diverse and Indigenous communities: Final report. Sydney: Cultural and Indigenous Research Centre Australia (CIRCA) & Department of Social Services.

McLennan, B. J. (2020). Emergency volunteering 2030: A sector-wide, snapshot view. Melbourne: RMIT University and Bushfire and Natural Hazards CRC.

McLennan, J., & Birch, A. (2005). A potential crisis in wildfire emergency response capability? Australia's volunteer firefighters. Global Environmental Change Part B: Environmental Hazards, 6(2), 101-107.

Muhammad Farid, H., Kragt, D., Dunlop, P., Gagne, M., Luksyte, A., & Holtrop, D. (2019). State Emergency Service volunteer views on expectations, experiences and motivations. Perth: University of Western Australia, Curtin University & Bushfire and Natural Hazards Cooperative Research Centre.

Roth, F., & Prior, T. (2019). Volunteerism in disaster management: Opportunities, challenges and instruments for improvement. Zurich: Centre for Security Studies – ETH Zurich.

Russell-Smith, J., Sangha, K. K., & Edwards, A. C. (2020). Scenario planning for remote community risk management in Northern Australia – Final report. Melbourne: Charles Darwin University & Bushfire and Natural Hazards CRC.

UNV. (2018). State of the world's volunteerism: The thread that binds – volunteerism and community resilience. New York: United Nations Volunteers Programme.

Warburton, J. (2010). Volunteering as a productive ageing activity: Evidence from Australia. China Journal of Social Work, 3(2-3), 301-312.

### Physical technology

Commonwealth of Australia. (2015). Critical infrastructure resilience strategy: Plan. Canberra: Department of Home Affairs.

Forbes. (2019). Insurance companies are cautiously optimistic that exoskeletons can reduce injury and claims. Forbes. https://www.forbes.com/sites/borislavmarinov/2019/09/30/insurance-companies-cautiously-optimistic-exoskeletons-technology-distribution-centers-warehouses-factories-manufacturing-reduce-injury-claims/?sh=1bdd58053e46

Foster, H., Whittaker, J., Handmer, J., Lowe, T., & Keating, A. (2013). Regional Victoria in 2021: changes and implications for the emergency management sector. Australian Journal of Emergency Management, 28(2), 51-55.

Gissing, A., Eburn, M., & McAneney, J. (2018). Shaping future catastrophic disasters. Melbourne: Risk Frontiers, Macquarie University, Australian National University & Bushfire and Natural Hazards CRC.

Howard, J., Murashov, V. V., Lowe, B. D., & Lu, M. L. (2020). Industrial exoskeletons: Need for intervention effectiveness research. American Journal of Industrial Medicine, 63(3), 201–208.

Infrastructure Australia. (2019). An assessment of Australia's future infrastructure needs. Commonwealth of Australia.

National Intelligence Council. (2012). Global trends 2030: Alternative worlds USA.

### Digital technology

Boin, A., & 't Hart, P. (2010). Organising for effective emergency management: Lessons from research 1. Australian Journal of Public Administration, 69(4), 357–371.

Braithwaite, V. (2020). Beyond the bubble that is Robodebt: How governments that lose integrity threaten democracy. Australian Journal of Social Issues, 55(3), 242-259.

Chittaro, L., & Sioni, R. (2015). Serious games for emergency preparedness: Evaluation of an interactive vs. a non-interactive simulation of a terror attack. Computers in Human Behavior, 50, 508–519.

Gissing, A., Eburn, M., & McAneney, J. (2018). Shaping future catastrophic disasters. Melbourne: Risk Frontiers, Macquarie University, Australian National University & Bushfire and Natural Hazards CRC.

Hayes, P., Karanasios, S., Cooper, V., & Poblet, M. (2019). Joining the dots: using social media to connect with more vulnerable Victorians during emergencies. The Australian Journal of Emergency Management, 4, 154-163.

Haworth, B., & Bruce, E. (2015). A review of volunteered geographic information for disaster management. Geography Compass, 9(5), 237-250.

Infrastructure Australia. (2019). An assessment of Australia's future infrastructure needs. Canberra: Commonwealth of Australia.

Khalaf, M., Alaskar, H., Hussain, A. J., Baker, T., Maamar, Z., Buyya, R., Al-Jumeily, D. (2020). IoT-enabled flood severity prediction via ensemble machine learning models. IEEE Access, 8, 70375-70386.

Mazzoleni, M., Verlaan, M., Alfonso, L., Monego, M., Norbiato, D., Ferri, M., & Solomatine, D. P. (2017). Can assimilation of crowdsourced data in hydrological modelling improve flood prediction? Hydrology and Earth System Sciences, 21(2), 839-861

Miller, S., & Hughes, D. (2017). The quant crunch: how the demand for data science skills is disrupting the job market. Burning Glass Technologies.

Neale, T., & May, D. (2020). Fuzzy boundaries: Simulation and expertise in bushfire prediction. Social Studies of Science, 50(6), 837-859.

Roth, F., & Prior, T. (2019). Utility of virtual operation support teams: An international survey. Australian Journal of Emergency Management, 34(2), 53-59.

Sims, D. (2019). How wearable technology could assist emergency services. TechRadar. https://www.techradar.com/au/news/how-wearable-technology-could-assist-emergency-services

### Shifting expectations

Brueckner, M., Holmes, K., & Pick, D. (2017). Out of sight: Volunteering in remote locations in Western Australia in the shadow of managerialism. Third Sector Review, 23(1), 29-49.

Cameron, S., & McAllister, I. (2019). The 2019 Australian federal election: Results from the Australian Election Study. Canberra: The Australian National University.

CSIRO Futures. (2016). Australia 2030: Navigating our uncertain future. Canberra: CSIRO.

Dickinson, H., & Sullivan, H. (2014). Imagining the 21st century public service workforce: Melbourne School of Government.

Dovers, S., & Handmer, J. (2012). The handbook of disaster and emergency policies and institutions. London: Taylor and Francis.

Eburn, M., & Dovers, S. (2015). Learning lessons from disasters: alternatives to Royal Commissions and other quasi-judicial inquiries. Australian Journal of Public Administration, 74(4), 495-508.

Edelman Trust Barometer. (2020). https://www.edelman.com.au/research/edelman-trust-barometer-2020

Maskrey, A. (2011). Revisiting community-based disaster risk management. Environmental Hazards, 10(1), 42-52.

McLennan, B. J. & Handmer, J.H. (2013). Sharing responsibility in Australian disaster management. Melbourne: RMIT University & Bushfire CRC.

Podger, A. (2017). Enduring challenges and new developments in public human resource management: Australia as an example of international experience. Review of Public Personnel Administration, 37(1), 108-128.

### Changing risk

AFAC. (2018). Discussion paper on climate change and the emergency management sector. Melbourne: Australasian Fire and Emergency Service Authorities Council.

Australian Government Department of Home Affairs. (2018). Profiling Australia's vulnerability: The interconnected causes and cascading effects of systemic disaster risk. National Resilience Taskforce.

Binskin, M., Bennett, A., & Macintosh, A. (2020). Royal Commission into national natural disaster arrangements – Report. Canberra: Commonwealth of Australia.

Bosomworth, K., Owen, C., & Curnin, S. (2017). Addressing challenges for future strategic-level emergency management: reframing, networking, and capacity-building. Disasters, 41(2), 306-323.

Clarke, H., Tran, B., Boer, M. M., Price, O., Kenny, B., & Bradstock, R. (2019). Climate change effects on the frequency, seasonality and interannual variability of suitable prescribed burning weather conditions in south-eastern Australia. Agricultural and Forest Meteorology, 271, 148-157.

Commonwealth of Australia. (2018). National disaster risk reduction framework. Canberra: Department of Home Affairs.

CSIRO. (2020). Climate change and disaster resilience. Commonwealth Scientific and Industrial Research Organisation (CSIRO).

CSIRO, & BOM. (2020). State of the climate 2020. CSIRO & Bureau of Meteorology.

Gissing, A., Eburn, M., & McAneney, J. (2018). Shaping future catastrophic disasters. Melbourne: Risk Frontiers, Macquarie University, Australian National University & Bushfire and Natural Hazards CRC.

Gissing, A., George, S., Eburn, M., McAneney, J., Timms, M., & Browning, S. (2020). Planning and capability requirements for catastrophic and cascading disasters: Final report. Melbourne: Risk

Frontiers, Australian National University, Macquarie University & Bushfire and Natural Hazards CRC.

Jones, R. N., Young, C., Handmer, J., Keating, A., Mekala, G., & Sheehan, P. (2013). Valuing adaptation under rapid change. Melbourne: National Climate Change Adaptation Research Facility (NCCARF), Victoria University, RMIT University.

Pescaroli, G., & Alexander, D. (2018). Understanding compound, interconnected, Interacting, and cascading risks: A holistic framework. Risk Analysis, 38(11), 2245-2257.

Rickards, L., & Keating, A. (2021). Implications of climate change for emergency services operations: Insights from the literature. Melbourne: RMIT University & Bushfire and Natural Hazards CRC.

Riddell, G. A., van Delden, H., Maier, H. R., & Zecchin, A. C. (2020). Tomorrow's disasters – Embedding foresight principles into disaster risk assessment and treatment. International Journal of Disaster Risk Reduction, 45, 1-14.

World Economic Forum. (2021). Global risks report. https://www.weforum.org/reports/the-global-risks-report-2021

# Changing work

### Recruitment, assessment, and selection

Dabirian, A., Berthon, P., & Kietzmann, J. (2019). Enticing the IT crowd: employer branding in the information economy. Journal of Business and Industrial Marketing, 34(7), 1403–1409.

Hayes, P., Bearman, C., Butler, P., & Owen, C. (2020). Non-technical skills for emergency incident management teams: A literature review. Journal of Contingencies and Crisis Management.

Ployhart, R. E., Schneider, B., & Schmitt, N. (2005). Staffing organizations: Contemporary practice and theory. CRC Press.

Ployhart, R. E., Schmitt, N., & Tippins, N. T. (2017). Solving the supreme problem: 100 years of selection and recruitment at the Journal of Applied Psychology. Journal of Applied Psychology, 102(3), 291–304.

Schneider, B. (1987). The people make the place. Personnel Psychology, 40(3), 437–453.

Willford, J. C. (2019). Enhancing judgment: The case for human–algorithm collaboration. Advancing the edge: Assessments for 2020. https://www.siop.org/Research-Publications/Items-of-Interest/ArtMID/19366/ArticleID/3059/Enhancing-Judgment-The-Case-for-Human-Algorithm-Collaboration

### Socialisation and training

Aitken, A. (2000). Identifying key issues affecting the retention of emergency service volunteers. Australian Journal of Emergency Management, 15(2), 16–23.

Allen, T. D., Eby, L. T., Chao, G. T., & Bauer, T. N. (2017). Taking stock of two relational aspects of organizational life: Tracing the history and shaping the future of socialization and mentoring research. Journal of Applied Psychology, 102(3), 324–337.

Chong, J. X. Y., Beenen, G., Gagné, M., & Dunlop, P. D. (2020). Satisfying newcomers' needs: The role of socialization tactics and supervisor autonomy support. Journal of Business and Psychology, 1–17.

Feldman, D. C. (1981). The multiple socialization of organization members. The Academy of Management Review, 6(2), 309

Hayes, P., Bearman, C., Butler, P., & Owen, C. (2021). Non-technical skills for emergency incident management teams: A literature review. Journal of Contingencies and Crisis Management, 29(2), 185-203.

Jones, M. & Berry, Y. (2017). Enriching leadership of volunteers in the emergency services. The Australian Journal of Emergency Management, 32 (2), 7-8.

Van Maanen, J., & Schein, E. H. (1979). Toward a theory of organizational socialization. Research in Organizational Behavior, 1, 209–264.

Woodman, S., Bearman, C. & Hayes, P. (forthcoming). Understanding skill decay and skill maintenance in first responder agencies.

### Work design

Andrei, D., & Parker, S. K. (2018). Work design for performance: Expanding the criterion domain. In D. S. Onez, N. Anderson, C. Viswesvaran, & H. K. Sinangil (Eds.), The SAGE handbook of industrial, work & organizational psychology (2nd ed., pp. 357–377). SAGE Publications.

Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories. The Academy of Management Annals, 3(1), 317–375.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. Organizational Behavior & Human Performance, 16(2), 250–279.

Karasek Jr, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. Administrative science quarterly, 285-308.

Knight, C. and Parker, S.K. (2019). How work redesign interventions affect performance: An evidence-based model from a systematic review. Human Relations, 74(1), 69-104.

Kooij, D. T. A. M. (2015). Successful aging at work: The active role of employees. Work, Aging and Retirement, 1(4), 309–319.

Kooij, D. T. A. M., Tims, M., & Kanfer, R. (2015). Successful aging at work: The role of job crafting. In M. Bal, D. T. A. M. Kooij, & D. M. Rousseau (Eds.), Aging workers and the employee–employer relationship (pp. 145–161). New York: Springer.

Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. Annual Review of Psychology, 65(1), 661–691.

Parker, S. K., & Andrei, D. M. (2020). Include, individualize, and integrate: Organizational meta-strategies for mature workers. Work, Aging and Retirement, 6(1), 1–7.

Parker, S. K., Morgeson, F. P., & Johns, G. (2017). One hundred years of work design research: Looking back and looking forward. Journal of Applied Psychology, 102(3), 403–420.

Schaufeli, W. B., Bakker, A. B., & van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. Journal of Organizational Behavior, 30(7), 893–917.

Taylor, F.W. (2003). Scientific management (1st ed.). Routledge.

## Diversity and inclusion

Luksyte, A., Unsworth, K. L., & Avery, D. R. (2018). Innovative work behavior and sex-based stereotypes: Examining sex differences in perceptions and evaluations of innovative work behavior. Journal of Organizational Behavior, 39(3), 292-305.

Luksyte, A., Waite, E., Avery, D. R., & Roy, R. (2013). Held to a different standard: Racial differences in the impact of lateness on advancement opportunity. Journal of Occupational and Organizational Psychology, 86(2), 142-165.

Male Champions of Change Fire and Emergency. (2021). Gender balance in fire and emergency: Going beyond 'it's the right thing to do' – The case for change. Melbourne: AFAC.

Young, C., Jones, R., & Kumnick, M. (2018). The long road: Building effective diversity and inclusion in emergency management organisations. Case study synthesis and draft framework. Melbourne: Victoria University & Bushfire and Natural Hazards CRC.

Young, C., & Jones, R. (2019). Risky business: Why diversity and inclusion matter. Into the future: building skills and capabilities for a diverse and inclusive workforce, workshop synthesis and key research findings. Melbourne: Victoria University & Bushfire and Natural Hazards CRC.

Young, C., & Jones, R. (2020). Diversity and inclusion framework for emergency management policy and practice. Melbourne: Victoria University & Bushfire and Natural Hazards CRC.

Young, C., Jones, R., MacDonald, F., & Rasmussen, B. (2021). Diversity and inclusion: Building strength and capability – Final report. Melbourne: Victoria University & Bushfire and Natural Hazards CRC.

## Change management

AHRI. (2021). Organisational change. AHRI:ASSIST. https://www.ahri.com.au/resources/ahriassist/organisational-development/organisational-change/

Allen, J., Jimmieson, N. L., Bordia, P., & Irmer, B. E. (2007). Uncertainty during organizational change: Managing perceptions through communication. Journal of Change Management, 7(2), 187–210.

Bass, B. M., & Avolio, B. J. (1990). Developing transformational leadership: 1992 and beyond. Journal of European Industrial Training, 14(5), 21–27.

Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. Journal of Applied Psychology, 87(3), 474–487.

Huy, Q.N. (2002). Emotional balancing of organizational continuity and radical change: The contribution of middle managers. Administrative Science Quarterly, 47(1).

Jarrel, T. (2017). Success factors for implementing change at scale. New York: McKinsey & Co Presentation, Behavioral Science & Policy Association.

Meaney, M., & Pung, C. (2008). McKinsey global results: Creating organizational transformations. McKinsey Quarterly, July, 1–7.

Moran, J. W., & Brightman, B. K. (2001). Leading organizational change. Career Development International, 6(2), 111-119.

Muller, J., MacLean, R., & Biggs, H. (2009). The impact of a supportive leadership program in a policing organisation from the participants' perspective. Work, 32(1), 69–79.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and Test. Decision Sciences, 27(3), 451–481.

## Managing mental health and wellbeing

Beyond Blue Ltd. (2018). Answering the call national survey: National mental health and wellbeing study of police and emergency services – Final report.

Boland, M. (2018). Review of the model Work Health and Safety laws. Safe Work Australia. https://www.safeworkaustralia.gov.au/system/files/documents/1902/review_of_the_model_whs_laws_final_report_0.pdf

Dollard, M., Bailey, T., Mclinton, S., Richards, P., Mcternan, W., Taylor, A., & Bond, S. (2012). The Australian workplace barometer: Report on psychosocial safety climate and worker health in Australia . University of South Australia & Safe Work Australia.

Harvey, S. B., Joyce, S., Tan, L., Johnson, A., Nguyen, H., Modini, M., & Groth, M. (2014). Developing a mentally healthy workplace: a review of the literature. National Mental Health Commission & Mentally Healthy Workplace Alliance.

LaMontagne, A. D., Keegel, T., Louie, A. M., Ostry, A., & Landsbergis, P. A. (2007). A systematic review of the job-stress intervention evaluation literature, 1990–2005. International Journal of Occupational and Environmental Health, 13(3), 268-280.

National Occupational Health and Safety Commission. (2003). National occupational health and safety commission annual report.

Parker, S. K., Morgeson, F. P., & Johns, G. (2017). One hundred years of work design research: Looking back and looking forward. Journal of Applied Psychology, 102(3), 403–420.

Productivity Commission. (2020). Inquiry report – Mental health. Canberra: Commonwealth of Australia.

Robertson, I. T., Cooper, C. L., Sarkar, M., & Curran, T. (2015). Resilience training in the workplace from 2003 to 2014: A systematic review. Journal of Occupational and Organizational Psychology, 88(3), 533–562.

## Leadership

AFAC. (2017). AFAC leadership capability framework. Melbourne: Australasian Fire and Emergency Service Authorities Council.

Cherry, N. L. (2014). The frontline: a new focus for learning about leadership. Australian Journal of Emergency Management, 29(2), 31.

Hannah, S. T., Uhl-Bien, M., Avolio, B. J., & Cavarretta, F. L. (2009). A framework for examining leadership in extreme contexts. The Leadership Quarterly, 20(6), 897-919.

Hayes, P., Bearman, C., Butler, P., & Owen, C. (2020). Non-technical skills for emergency incident management teams: A literature review. Journal of Contingencies and Crisis Management.

Kragt, D., Luksyte, A., Dunlop, P., Holtrop, D., & Gagne, M. (2020). The differential effects of leadership on retention and thriving of older and younger volunteers. Unpublished Manuscript.

Lichtenstein, B. B., Uhl-Bien, M., Marion, R., Seers, A., Orton, J. D., & Schreiber, C. (2006). Complexity leadership theory: An interactive perspective on leading in complex adaptive systems.

Muhammad Farid, H., Kragt, D., Dunlop, P., Gagne, M., Luksyte, A., & Holtrop, D. (2020). Autonomy, belongingness, and competence: The ABCs of emergency volunteer retention. Melbourne: Bushfire and Natural Hazards CRC

Owen, C., Scott, C., Adams, R., & Parsons, D. (2015). Leadership in crisis: developing beyond command and control. The Australian Journal of Emergency Management, 30(3), 15-19.

## Managing an ageing workforce

ABS. (2005). Mature age workers. 1301.0 – Year Book Australia, 2005; Australian Bureau of Statistics. https://www.abs.gov.au/Ausstats/abs@.nsf/0/D4CD96E96875500DCA256F7200833041

ABS. (2018). Population projections, Australia, 2017 (base) – 2066. Australian Bureau of Statistics. https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release

ABS. (2020). Labour Force, Australia. Australian Bureau of Statistics https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/latest-release

Blok, M. M., & de Looze, M. P. (2011). What is the evidence for less shift work tolerance in older workers? Ergonomics, 54(3), 221–232.

Fisher, G. G., Chaffee, D. S., Tetrick, L. E., Davalos, D. B., & Potter, G. G. (2017). Cognitive functioning, aging, and work: A review and recommendations for research and practice. Journal of Occupational Health Psychology, 22(3), 314–336.

Hedge, J. W., & Borman, W. C. (2012). The Oxford handbook of work and aging. Oxford University Press.

Ng, T. W. H., & Feldman, D. C. (2008). The relationship of age to ten dimensions

of job performance. Journal of Applied Psychology, 93(2), 392–423.

Parker, S. K., & Andrei, D. M. (2020). Include, individualize, and integrate: organizational meta-strategies for mature workers. Work, Aging and Retirement, 6(1), 1–7.

Sharit, J., & Czaja, S. J. (2012). Job design and redesign for older workers. In The Oxford Handbook of Work and Aging. Oxford University Press.

Thomas, M., & Gilfillan, G. (2018). Workforce participation measures – Budget Review 2018-19 Index.

Truxillo, D. M., Cadiz, D. M., & Hammer, L. B. (2015). Supporting the aging workforce: A review and recommendations for workplace intervention research. Annual Review of Organizational Psychology and Organizational Behavior, 2, 351–381.

### Managing volunteer workforces

Kappelides, P., & Johnson, T. (2020). A heavy load: Challenges and current practices for volunteer managers in the USA, Australia, and Canada. Journal of Nonprofit & Public Sector Marketing, 32(1), 4-24.

Knies, E., & Leisink, P. (2018). People management in the public sector. In C. Brewster & J.-L. Cerdin (Eds.), HRM in mission driven organizations: Managing people in the not for profit sector (pp. 15-46). Cham: Springer International Publishing.

Stirling, C., Kilpatrick, S., & Orpin, P. (2011). A psychological contract perspective to the link between non-profit organizations' management practices and volunteer sustainability. Human Resource Development International, 14(3), 321-336.

Studer, S., & von Schnurbein, G. (2013). Organizational factors affecting volunteers: A literature review on volunteer coordination. Voluntas, 24(2), 403-440.

Warburton, J., Smith-Merry, J., & Michaels, C. (2013). Delivering community services in a new world of volunteering: a case study from Sydney, Australia. International Journal of Public Administration, 36(11), 798-806.

# APPENDIX 1. CONTRIBUTIONS AND ACKNOWLEDGEMENTS

## Project core team

### Chief Investigators

- Dr Blythe McLennan, Centre for Urban Research, RMIT University
- A/Prof Patrick Dunlop, Future of Work Institute, Curtin University

### Project Coordinator and Principal Research Fellow

- Dr Jane Chong, Future of Work Institute, Curtin University

The project core team contributed to the literature reviews and reports as section authors and as editors and reviewers.

## Steering Committee

The *Workforce 2030* project was guided by a Steering Committee made up of key emergency management sector representatives:

- Nancy Appleby, Department of Fire and Emergency Services, WA
- Loriana Bethune, Bushfire and Natural Hazards CRC
- Kate Browning, ACT Emergency Services Agency
- Joe Gomez, Air Services Australia
- Stefan de Haan, Department of Biodiversity, Conservation and Attractions, WA
- Sandra Lunardi, Australasian Fire and Emergency Services Authorities Council (AFAC)
- Steve Richardson, Tasmania Fire Service
- Trina Schmidt, NSW Rural Fire Service
- Matthew Thompson, Queensland Fire and Emergency Services
- Georgeina Wheelan, ACT Emergency Services Agency

## Changing landscape contributors

- Demographic change – Dr Jane Chong
- Changing nature of work – Professor Mark Griffin, Curtin University
- Changes in volunteering – Dr Blythe McLennan
- Physical technology – Dr Jane Chong
- Digital technology – Dr Jane Chong
- Shifting expectations – Dr Blythe McLennan
- Changing risk – Dr Blythe McLennan, Dr Adriana Keating & Prof Lauren Rickards, RMIT University

## Changing work contributors

- Recruitment, assessment, and selection – A/Prof Patrick Dunlop & Dr Djurre Holtrop, Curtin University
- Socialisation and training – Dr Jane Chong, Hawa Muhammad Farid & Professor Marylène Gagné, Curtin University
- Work design – Professor Sharon Parker, Curtin University & Dr Jane Chong
- Diversity and inclusion – Celeste Young, Victoria University & A/Prof Aleksandra Luksyte, Curtin University
- Managing mental health and wellbeing – Karina Jorritsma, Professor of Practice & Dr Jane Chong, Curtin University
- Leadership – Dr Darja Kragt, University of Western Australia
- Change management – Dr Jane Chong & Professor Marylène Gagné
- Managing an ageing workforce – Dr Jane Chong & Dr Daniela Andrei, Curtin University
- Managing volunteer workforces – Dr Blythe McLennan

## Research Advisory Panel

Members of the Research Advisory Panel individually reviewed sections of the *Workforce 2030* literature reviews and provided detailed feedback specific to their research expertise that has been incorporated into the final outputs.

- A/Prof Chris Bearman, CQUniversity (Changing nature of work; general review of Phase 2 literature review)
- Andrew Gissing, Risk Frontiers (Physical and digital technology; Changing risk)
- Dr Peter Hayes, CQUniversity (Digital technology, Managing mental health and wellbeing)
- Dr Pam Kappelides, La Trobe University (Changes in volunteering, Managing volunteer workforces)
- Adj Prof John Handmer, RMIT University (Changing risk; Shifting expectations)
- Celeste Young, Victoria University (Changing risk)

## Emergency management sector review

Numerous stakeholders from the emergency management sector also reviewed the report and literature reviews to provide insights into priorities and implications. Some of their insights have been incorporated into this report. However, many more conversations are needed to fully reflect on the scope of implications for the sector from the topics in this report. We look forward to future conversations that will continue to address the issues and implications highlighted here.

Stakeholder reviewers included members of the following AFAC collaboration groups and technical groups:

- Workforce management
- Volunteer management
- Mental health and wellbeing
- Urban operations
- Rural land management
- SES operations
- Employee relations network



Emergency Services Workforce 2030 provides a consolidated, overview picture of **emerging workforce challenges and opportunities likely to face emergency service organisations** in the next decade.

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