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ASSESSING COMMUNITY RESILIENCE FOR EMERGENCIES IN LOCAL GOVERNMENT POLICY

Maroondah City Council and Knox City Council

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1 INTRODUCTION

Exposure to hazards may result in emergencies or disasters that have the potential to overwhelm the capacity of communities to respond and recover effectively. In terms of natural hazards, an increase in the incidence of extreme weather events linked to climate change is expected to result in greater disaster losses in the future. Resilience-based approaches have been adopted in Australia and overseas to deal with this problem.

Resilience is a term that is used across multiple disciplines, including in the physical and material sciences, psychology, ecology, environmental science and more recently, in emergency and disaster management (Alexander, D.E. 2013). Therefore, it has many definitions, several of which reflect its significance as the guiding principle for emergency and disaster management in Australia,

> 'Resilience is the ability of system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management' (United Nations Strategy for Disaster Risk Reduction, 2019), or

The definition developed for the 100 Resilient Cities Project in Melbourne:

> 'Resilience is the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grown no matter what kinds of chronic stresses and acute shocks they experience' (Mulligan et al, 2016, p.10).

A definition of resilience has also been developed as part of the Australian Disaster Resilience Index (ADRI) project:

> 'Resilience is the capacity of communities to prepare for, absorb and recover from natural hazard events and to learn, adapt and transform in ways that enhance these capacities in the face of future events' (Parsons, 2016 p.6).

The National Strategy for Disaster Resilience was adopted in 2011 by all levels of Australian Government (Commonwealth of Australia, 2011). This marked a policy shift away from an emphasis on dealing with the aftermath of disasters toward a stronger focus on disaster preparation and planning, and the reduction and management of hazards. In 2018, a National Disaster Risk Reduction Framework (NDRRF)[i] (Commmonwealth of Australia, 2018) was introduced to guide disaster risk reduction activities for greater resilience. Importantly, the NDRRF deals with the increasing problem of disasters by considering the whole system and its interdependencies. In doing so it incorporates sustainability and climate change adaptation goals.

While State Governments play the major role in emergency management, the hazards, risks and the nature and severity of disaster impacts vary according to highly localised social, economic and environmental factors (Cutter et al, 2008). The adverse impacts from natural disasters that are invariably experienced at the local level may be sustained for many years afterwards. Local Government is the level of government that is closest to the community and, as such, it maintains a

long-term commitment to managing local issues associated with emergencies and disasters. This role is integrally linked to local government's broader responsibility for the planning and provision of the majority of services and infrastructure in their constituent communities. There are 597 local government areas in Australia (Australian Local Government Association, 2020) with 79 in Victoria (Victorian Local Government Association, 2020.) Therefore, the services provided by local government and the policies and plans that shape them have a profound influence on the quality of life and the wellbeing of the Australian population as a whole. Local government is in a unique position to strengthen community resilience for emergencies, both through its local emergency management policies and plans and also, and perhaps more pervasively, through opportunities to positively influence the determinants of resilience through its broad range of council policies and plans.

In order to explore some of these opportunities, Yarra Ranges Council and the Maroondah and Knox City Councils asked the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) to evaluate their policies in terms of resilience. They were seeking answers to the question: To what extent do our council policies support resilience for emergencies or disasters? This project, titled Assessing Community Resilience for Emergencies in Local Government Policies (ACRE) was developed to examine the alignment between existing local government policies and the characteristics that enable community resilience. Maroondah and Knox City Councils were chosen as case studies. As a starting-point, councils were interested in evaluating their policies in relation to the Community Reslience Framework for Emergency Management (Emergency Management Victoria, 2017), developed by the Victorian State Government.

The idea that social resilience is intrinsic to resilience for emergencies or disasters is a central message in the Community Resilience Framework for Emergency Management (ibid). It provides policy guidance to encourage local government to embed resilience into its everyday activities, not only to improve the general health, wellbeing and prosperity of their communities, but as a way of highlighting how local communities can play their part in improving their ability to plan, prepare for, and to withstand and recover from adverse events.

In order to explore their full potential for strengthening resilience, councils also sought to evaluate their policies more broadly. The two councils' policies were assessed against resilience information found in the academic literature. This research complements the Community Resilience Framework for Emergency Management (ibid) and adds to the body of evidence about local government's existing contribution and inherent potential to enhance community resilience for emergencies.

1.1 STRUCTURE OF THE REPORT

Two documents have been produced from the ACRE project. These are the full report, titled:

- Resilience at Work in Local Government - Assessing Community Resilience for Emergencies in Local Government Policy (ACRE): Maroondah City Council and Knox City Council case; and

- Summary – Assessing Community Resilience for Emergencies in Local Government Policy (ACRE): Maroondah City Council and Knox City Council case, which provides a snapshot of the ACRE Project and should be read in conjunction with the full report.

The full report is structured as follows:

Section 2. Background provides an overview of the policy context and the scope of the project, including some of the policy issues that informed the questions the ACRE project sought to answer.

Section 3. The Research Approach provides the project methodology. This consisted of a collection of steps or methods starting with the development of the evaluation design. A cross section of policies were identified for the evaluation sample based on Maroondah and Knox City Councils' activities (Table 3-1).

Section 3 also outlines how the policies were evaluated. A framework analysis method, which is commonly used in public policy analysis was decided upon, noting that the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) was already available to use for the first stage of the evaluation. This document was reviewed in detail to extract key themes, terms and words. From this, the Emergency Management Victoria Resilience Evaluation Framework (EMV Framework) was developed (See Figure 3-1).

Section 3.2 provides a literature review of resilience studies from which other key themes and terms were derived. These were used to develop a second evaluation framework, the Resilience Research Evaluation Framework (RR Framework) (Figure 3-2). Both sets of key themes and terms are shown in Table 3-2. These terms were described and categorised into codes that make up a coding system of two parts: the EMV Framework and the RR Framework. The Maroondah City Council and Knox City Council policies in the sample were read closely and their content was analysed according to the codes in order to describe its links, if any, to resilience.

Section 4. Findings presents the queries in tables or as figures, with a brief explanation of the main features. These are summarised below in Section 1.3 Overview of ACRE Outcomes. Section 5. Section 5. Discussion and Recommendations provides a more detailed interpretation of the findings and discusses these in the context of Maroondah and Knox Local Governments and within the broader policy environment. Discussion and Way Forward interprets the main findings in terms of policy strengths and gaps. It also highlights where and how these learnings can be included into current policy development, and how this process will be assisted by further research. Section 6. Conclusion revisits the research question and makes a number of broad observations about the ACRE project and its possible implications for future research and policy development.

It should be noted that the term 'emergency management' is used instead of 'disaster management' in the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017). However, for reasons

that are explained more fully in Section 2. Background, the term 'disaster management' is used in the ACRE project.

1.2 OVERVIEW OF ACRE OUTCOMES

The following points represent ACRE headline outcomes (with more detailed information provided in Section 4. Findings.)

- Overall, both the Maroondah and Knox City Councils' policies are well aligned with the characteristics of resilience.
- The degree of alignment with resilience across both evaluation frameworks is similar.
- Amalgamation of the two evaluation frameworks (EMV Framework and RR Framework) is recommended in order to better account for the resilience strengths that are present in existing policies as well as to build the emphasis on resilience into future local government policy development.
- Differences between the two frameworks were more commonly found in their lower level or sub-categories rather than at the higher level. This issue is discussed further in some of the dot points below.
- Overarching or Strategic policies (Table 3-1) have the the highest frequency of matches to both evaluation frameworks. This in all likelihood is because strategic and overarching policies tend to have broad coverage and mention a diverse number of subjects.
- Policy adherence to resilience is strongest for the Connected, Inclusive and Empowered domain in the EMV Framework and its counterpart, the Connectedness domain in the RR Framework, followed by the Sustainable Built and Natural Environment and the Sustainability domains.
- Gaps in council policies across the board were identified in the sub-categories of Volunteering, and Business Continuity Planning, with these being mentioned infrequently, if at all.
- There were relatively few references coded from either of the councils' municipal emergency management plans, except to the sub-categories specific to emergency management situated in the domains of Reflective and Aware and Health and Wellbeing. This indicates that emergency management policies are not well integrated with other council policies.
- In contrast, both councils' climate change adaptation and action plans reflected a wide range of resilience characteristics. This suggests better integration of this issue with mainstream council policies.
- A number of council policies show stronger adherence to the RR Framework in the domain of Governance and its sub-categories of Information and Communication and Self-Efficacy, compared with the closest corresponding domain of Democratic and Engaged in the EMV Framework. This may imply that council policies favour a more bottom-up emphasis that is not discernible using the EMV Framework.

- Comparisons between the two evaluation frameworks were made possible in the research. The RR Framework has more direct relevance to disaster resilience than the EMV Framework which is closely modelled on the more generic Victorian Community Indicators project (Wiseman et al, 2006). This could signal the need to more clearly define the purpose of resilience policy approaches and to question the assumption that generic approaches are identical to those known to achieve disaster resilience.
- The RR Framework is more sensitive than the EMV Framework to a number of matters that are given a high priority in Maroondah and Knox Council Policies. For example, it includes Networks as a sub-category of its Connectivity domain. Networks is not a sub-category in the Connected, Inclusive and Empowered domain in the EMV Framework. The literature review showed that the concept of networks and social capital are synonymous and key to building both generic resilience and disaster resilience. The inclusion of Networks picks up the array of committees and advisory groups and other forms of collaboration and partnerships that are a prominent feature of both local governments' policies.

2 BACKGROUND

The terms 'disaster management' and 'emergency management' are often used interchangeably. It is noted that the latter is used in the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017). Disaster Management is the preferred term in the ACRE project for a range of reasons. It is more consistent with the terminology used in major national and international policy documents, including the National Strategy for Disaster Resilience (Commonwealth of Australia, 2011), the National Disaster Risk Reduction Framework (Commonwealth of Australia, 2018) and the Sendai Framework for Disaster Risk Reduction (United Nations International Strategy for Disaster Reduction, 2015). It is also more consistent with the still widely accepted Prevention, Preparedness, Response and Recovery (PPRR) spectrum of disaster management activity (Rogers, 2011).

The use of the term emergency implies government and quasi-government emergency services agencies and rapid onset events. It is tactical and action-orientated, whereas, disaster management is more strategic and consequence-related. Disaster management, is more relevant to a broader range of stakeholders, all of whom must be engaged to build disaster resilience. It conveys a sense of the temporal nature of disasters with impacts that may reach across the whole community. Disaster also implies a level of scale. For example, a house fire is an emergency but is not of sufficient scale or impact to be categorised as a disaster.

It should also be noted that the term natural disaster is used in this report instead of natural hazard event, even though the latter it is preferred by many due to its preventive focus ie a disaster can be prevented by effective hazard management or hazard reduction. Natural disaster is still regularly used interchangeably with natural hazard event and is well understood amongst the general population (Parsons, 2016). It was also noted that resilience, as a broad concept, is emphasised in the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) rather than as a quality that is reserved for discussions about disasters or hazard events. While the rationale for this may be sound and intended to incorporate resilience into the mainstream, it also raises issues that councils may need to consider in terms of how resilience policy is designed and implemented. This is discussed further in Section 5.

The point was made in Section 1. Introduction, that hazards and risks are highly localised. It stands to reason that local conditions within the Maroondah and Knox local government areas must be factored into resilience planning and implementation. Some local conditions may create vulnerabilities. These need to be addressed because they may predispose certain groups or individuals to an increased chance of experiencing adverse consequences from a disaster. As part of this process, it is equally as important to identify and encourage existing community strengths because these can reduce vulnerability and protect people from harm.

The Knox and Maroondah municipalities are situated in geographically adjacent local government areas. In their policies they both cite similar social, economic and environmental factors, that may present as challenges or benefits to

resilience but, nonetheless need to taken account of in policy design and implementation. For example, the population of Maroondah and Knox Local Government Areas has grown substantially in the last decade which places extra demands on local infrastructure, particularly housing supply. The increase in population has resulted in the pressure on development and its encroachment on the natural environment. The demographic mix has also become far more diverse with people from non-English speaking and culturally diverse backgrounds making up a higher proportion of the total population. Add to this is an increase in the proportion of the ageing population and the comcomitant demand for suitable and accessible services to meet their needs. Pressures on local government are compounded by federal and state funding arrangements and the impacts of climate change. On the other hand, Maroondah and Knox residents value their communities because they combine the convenience of city living, each with their own hubs of economic activity and efficient transport links, with the ability to enjoy a green leafy environment with abundant space with ready access to health and unpolluted waterways and other natural resources (Knox City Council, 2017; Maroondah City Council, 2017)

The recently launched Australian Disaster Resilience Index (ADRI) is the first index to provide baseline information about resilience at the local government level in Ausralia. It is a valuable step toward building our ability to to assess how government policies support local resilience. When Maroondah and Knox Local Government Areas, were examined using ADRI, they were both ranked as having the highest potential for resilience (Bushfire and Natural Hazards Cooperative Research Centre & University of New England, 2020). This could be taken as a sign that Maroondah and Knox City Council policies are successful at building resilience. However, there may be other factors at play, including possible variation in levels of resilience within local government areas that, to be identified, would require access to more granular information. Certainly, there is still much to discover about how local government policies can actually improve the level of resilience in real terms. Learning more about how to bridge the gap between good policy and successful outcomes is the aim of the ACRE project.

2.1 POLICY CONTEXT

The policy context for this research project is multi-layered and complex. Within the Australian Federation, Australia is implementing an Australian Disaster Risk Reduction Framework in accordance with its commitment to the Sendai Framework for Disaster Risk Recuction. This was agreed by all Australian states and territories in 2018 (Commonwealth of Australia, 2018). It supplements the National Strategy for Disaster Resilience (Commonwealth of Australia, 2011) which remains the overarching national disaster management policy. Principles of resilience have since been incorporated in varying ways into all state and territory policies and arrangements for emergency management, including in Victoria.

The health and safety of their communities has always been a core concern of local government and they are well aware of the benefits of resilience for strengthening communities' ability to prepare for, withstand, recover and bounce back from the impacts of disasters or other significant disruptions. The uptake of resilience into local policy approaches is also being directly

encouraged by the Victorian Government. For example, the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) provides resilience policy guidance that was developed by the Victorian Government in consultation with key stakeholders including local government. This policy guidance aims to embed resilience-building into the day to day activities and operations of local authorities. It recognises that community resilience in general can be brought to bear in disasters and will complement disaster management measures undertaken by other levels of government. This is consistent with the idea of shared responsibility, which is one of the key principles of disaster resilience. Certainly, against the background of severe fires, floods and storms across Australia in recent years and the forecast of an increase in extreme weather events in the future, it is critical to harness and build upon existing capacity to increase resilience within our communities.

2.1.1 Local government

The project was conducted with reference to Maroondah City Council and Knox City Council, both situated in the Eastern Metropolitan area of Melbourne, Victoria.

There are 537 local governments in Australia (Australian Local Government Association, including 79 in Victoria (Victorian Government, 2020). This level of access to local communities suggests that local government is well placed to play a major role in the implementation of disaster resilience policy. The extent to which this occurs in practice varies across the different jurisdictions depending on state and territory government arrangements, particularly the legislative frameworks within which local government operates. Local government is not included in the Australian Constitution. From a legal point of view, this makes it essentially an instrument of state and territory governments. This has implications for its autonomy and places limitations on its level of funding, particularly because it cannot directly receive federal funding. Local government is, however represented at the national level on the Ministerial Council for Police and Emergency Management (Australian Government, 2020b) and by the Australian Local Government Association on its corresponding senior officials' group the Australian and New Zealand Emergency Management Committee (Australian Government, 2020a). In terms of activities that are central to disaster management, local government, including in Victoria, has ongoing responsibilities to:

- Implement land use planning, development and building regulations, although again, this is predominantly in accordance with state government laws.
- Undertake hazard management through its wastewater and stormwater management and land use planning and regulation roles. Associated activites include flood mapping and management that is done in partnership with the relevant floodplain management authorities.
- Support disaster response including, but not limited to managing local evacuation centres.

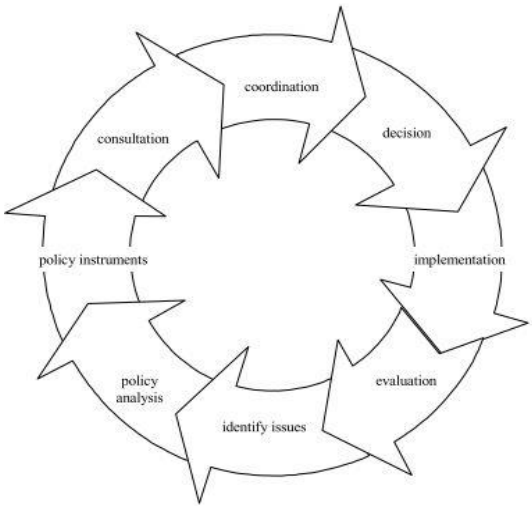
In recent years local government has become involved in a greater number of more diverse areas. For example, in Victoria, local government is in charge of

local disaster recovery coordination including that of informal emergency volunteers. Funding pressures are a perennial issue for local government which has an historically low revenue base. This was by highlighted by Brown who compared the 6% share of public revenue allocated to local government in Australia, with that of 26% in Canada and 17% in the USA (Brown, 2007). Revenue is obtained from residential rates, Grants of Assistance come from state and territory government and funding that is matched by the state government is provided by the Federal government for disaster mitigation Formerly provided through the National Partnership Agreement Natural Disaster Resilience (Commonwealth of Australia, 2017-18) this funding was repackaged in 2020 as the National Partnership on Disaster Risk Reduction and will be implemented in Victoria under the Risk and Resilience Grants Program (RRGP) (Council on Federal Financial Relations, 2020). The Australian Local Government Association, in formal submissions to the federal government, has repeatedly raised the continuing financial disadvantages experienced by local government, including a lack of capacity to fund local government disaster mitigation projects (Australian Local Governemnt Association, 2020). At the time of writing this report, the RRGP guidelines were not available so it was not known whether a local government contribution would be required for disaster mitigation funding under the RRGP.

The above indicates that local government has a shortage of effective policy levers for building resilience to disasters. On the other hand, this may be offset by its ability to directly influence policy implementation at the community level in a broad range of areas, many, if not most of which are determinants of social resilience. The synergies between social resilience and disaster resilience are highlighted in the literature review in Section 3.2 and underpin the recommendation for councils to adopt a combined approach to developing and implementing disaster resilience policy.

2.1.2 Rationale

This project is based on the premise that effective policy outcomes rely on effective policy development and implementation. Policy evaluation and review are necessary to monitor policy processes, impacts and outcomes in order to assess whether and how a given policy is achieving its objectives. FIGURE 2-1



THE AUSTRALIAN POLICY CYCLE (BRIDGMAN, P & DAVIS, G. 2003, P 100).

In a democratic society, transparency and accountability is achieved through the availability of information about the p erformance of publicly funded activities.

An organisational culture that supports evaluation benefits policy practitioners and communities alike. Evidence derived from policy evaluation can inform and build confidence in investment decisions and in program and service planning, design and delivery; and it bridges the gap between research and policy to support continuous learning and improvement.

Figure 2-1 (above) depicts the Australian Policy Cycle (Bridgman, P., Davis, G, 2003. p.100) where effective policy is linked with policy implementation, review and evaluation. With all levels of Australian governments turning to resilience principles to underpin preparation, planning, response to and recovery from emergencies, it is becoming more important to understand how resilience is operationalised and measured. Many resilience characteristics are not easily measurable. The research literature tends to measure outcomes and not the equally important factors related to social mechanisms (Saja, 2019). According to Bennett et al (2005, cited in Saja page 11) 'Resilience has proven difficult to measure and an alternative to estimating resilience directly is to monitor characteristics of systems that are related to the resilience of the system and are measurable'. Furthermore, confusion exists around the multitude of terms that may be used interchangeably with the term indicator. To address this, Saja proposed a standardised schema (Figure 2-2) of the levels of evaluation or measurement of resilience for the purposes of investment decision-making.

Local government has the reach, and designs and implements a comprehensive range of policies and plans that offers potential to incorporate approaches that support local resilience. During the past decade or so, a very useful body of research has provided instruments for communities to assess their resilience and the first Australian disaster resilience index has recently been published (Bushfire and Natural Hazards Cooperative Research Centre, 2020). Upstream, there is a need for information, including baseline data, about the extent that existing local government policy is already consistent with community resilience so as not to 'throw the baby out with the bathwater'. Examining local government policy can identify areas of consistency with resilience as well as areas where there may be opportunities to better enable resilience. Local government policies largely guide service development and delivery and this is evidenced by an emphasis on implementation. This takes the form of inclusion within policies of content aimed at practical application and can include the formulation of aims and objectives, identification of resources, plans of action and indicators to measure achievement of the objectives or performance. All of these approaches allow evaluation of policy and surely the 'proof of the pudding' is in evidence of the effectiveness of implementation. This is a basic principle of policy development. Sound policy is a good and necessary foundation, but it is doomed to failure without effective implementation. Since the NSDR was adopted progress has been made to develop instruments and research tools to measure resilience. This is vital in order to monitor the success of disaster resilience policy and to identify where more work needs to be done. As well as working to achieve policy outcomes downstream, it makes sense to insert resilience approaches into policy

development. This presents additional opportunities to deliver successful policy outcomes

Subsequently this project assessed a cross section of Victorian local government policies with reference to two case studies: Maroondah City Council and Knox City Council.

2.1.3 Scope

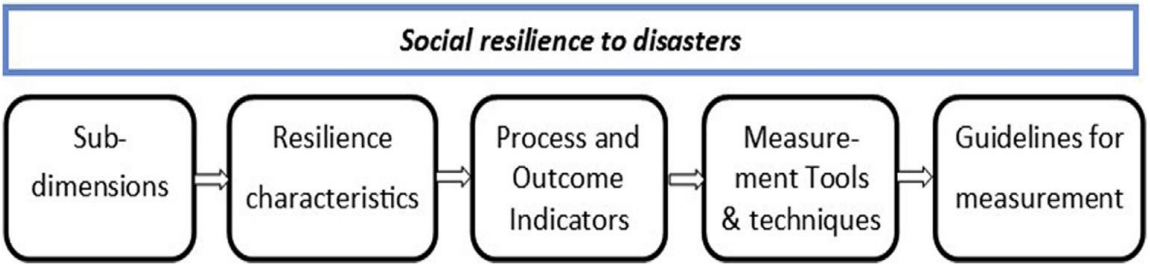


FIGURE 2-2 SOCIAL RESILIENCE TO DISASTER: FIVE LAYERS OF MEASUREMENT.

The ACRE project used qualitative methods to evaluate the extent to which Maroondah City Council and Knox City Council policies align with community resilience for emergencies.

The first two boxes in Figure 2-2, Resilience sub-dimensions *and* Resilience characteristics represent the level and scope of resilience analysis that was undertaken in the ACRE project. The other three layers, Process and outcome indicators, Measurement tools and techniques, and Guidelines for measurement, are out of scope for the ACRE project. An evaluation that reaches into these levels of measurement would, ideally, develop and employ tools that have undergone reliability and validity testing. Councils could conduct future research to test and review the performance indicators that they are already using to assess their policy outcomes.

Having said that, qualitative resilience evaluation frameworks can provide rich contextual information. They are also more likely to be adaptable across different locations. Therefore, they may have equal or higher value for practitioners than those with more specified and defined indicators.

Section 3. describes the research approach and methodology. Section 3.2 includes a literature review that identifies key resilience themes, concepts and characteristics. These contributed to the development of the evaluation frameworks used in this project. Section 3.2 also provides additional context for the discussion on the project findings in Section 5.

3 RESEARCH APPROACH

Qualitative data analysis best describes the research approach employed in the ACRE project. This was done by matching the wording in a sample of council policies to the various characteristics of resilience. The number of matches, referred to as references, was counted and compared across different categories. A single word or a section of text could be counted as one reference. The various categories include the eight Maroondah Community Outcomes; the eight Knox Goals; and 11 council functions or Functional Categories.

The evaluation was in two parts. This twofold approach aimed to link public policy to academic research. Two local government community resilience evaluation frameworks were developed (See Section 3.3 for more details): The Emergency Management Victoria Community Resilience Evaluation Framework (EMV Framework) and the Resilience Research Evaluation Framework (RR Framework). First, council policies were evaluated by checking their consistency with the EMV Framework. Next, the same policies were evaluated using the RR Framework.

The overall process was assisted by the use of NVivo Version 12.4, a qualitative data analysis software packgage. NVivo 2.4 houses all the project data and provided an automated system for conducting the various data queries (Section 4).

The following summarises the project methodology:

- Scoping and selection of a sample of council policies for evaluation in Section 3.1 with the sample depicted in Table 3-1,
- Literature review of community resilience models, frameworks, characteristics or indicators in Section 3.2,
- Development of codes that describe key resilience themes and terms. These descriptors form the coding scheme and are provided in the ACRE Codebook at Appendix 2. The codes were organised into two evaluation frameworks. The first is based on the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) and is shown in Figure 3-2. The second shown in Figure 3-3 is an amalgamation of the first with elements derived from the literature review.
- Development of a classification scheme in NVivo 2.4 covering both sets of council policies each of which is referred to as a 'case'. Classifications determine the types of analyses or comparisons that can be made across the data by including attributes for each case. For example, the various attributes include a choice between Maroondah policies or Knox policies; eight Maroondah Community Outcomes or eight Knox Goals; 11 policy functions (functional categories); the year of publication; and whether the policy includes an action or implementation plan. All of these variables are shown in the ACRE Classification Sheet which is provided at Appendix 3, with a simplified version depicted in the body of this report at Table 3-3.
- Reading each of the policies and matching pieces of their text to relevant codes in each of the evaluation frameworks. This data is stored in the NVivo 2.4 program within the ACRE Project.

- Presentation of the findings in diagrammatic form with a description of key results in Section 5. Findings, followed by a more detailed interpretation and discussion of these results in Section 6. Discussion and Recommendations.

3.1 SELECTION OF POLICIES FOR EVALUATION

Local government is the level of government that is closest to the community. This relationship is reflected in its roles and responsibilities which centre around the planning and provision of services to their local communities. Compared with other levels of government that are not always involved in direct service delivery, this means that policy and implementation are often closely linked. Not surprisingly, many of the major Knox and Maroondah policies and plans incorporate elements of both. A policy document may include an Action Plan or an Implementation Plan.

Knox City Council has more than 23 current policies and plans and Maroondah City Council has approximately 30. Evaluation of all of these was outside the scope of this project. Thus 15 each have been selected with the aim of providing a cross section that represents the range and scope of council policies and functions. In addition, one policy, the Melbourne East Regional Plan has been included. This policy covers all councils in the Eastern Metropolitan group, including Maroondah and Knox City Councils.

The council policies that have been selected for evaluation are in Table 3-1 where they are categorised according to Knox City Council Goals or Maroondah City Council Community Outcomes, and against a list of council functions labelled as Functional Categories. Government policies apply at different scales and local government is no different. A number of policies that operate at a higher level were deliberately included in the sample because they provide a context and contribute to overall policy coherence through guidance and principles that inform lower level policies, plans and activities. Therefore, it is important to understand how the broader policy context, in the first instance, is consistent with community resilience. For this reason, 'Overarching' was included as an extra Functional Category in the sample and a 'Strategic' policy category was added to the 8 Knox Goals and the 8 Maroodah Community Outcomes.

In Table 3-1 each of the policies has been shaded consistent with the Functional Category to which it has been allocated.

Of the total that were initially scoped, a number of policies and plans were identified as primarily operational. For example, Knox Drainage Asset Management Plan, Country Fire Authority Community Information Guides. Others contain a large amount of technical or specialised content, while others focus solely on implementation or action planning. Policies, or parts thereof, that fit these descriptions, were excluded from the evaluation and could be picked up in future evaluation research. For example, some of the content in the Knox Climate Change Response Plan 2012- 2022, that discusses carbon accounting methods was not included. The Knox Road Management Plan, which refers to asset decision tools and information systems has been excluded, although the higher-level Knox Strategic Asset plan is included, but its many technical attachments are not.

Knox Goals	Policy and Plans	Functional Category	Maroondah Community Outcomes	Policies and Plans	Functional Category
Strategic	Community and Council Plan 2017-2021 Melbourne East Regional Plan *Knox Communication Plan 2018-2021	Overarching	Strategic	*Maroondah City Council Plan 2019/20 Update Maroondah 2040: Our future together *Melbourne East Regional Plan	Overarching
	Strategic Asset Management Plan (Attachments excluded)	Infrastructure and Assets			
1. Natural and built environment	Water Sensitive Urban Design and Stormwater Management Plan 2010 *Liveable Streets 2012-2022	Environment and Sustainability	1. A safe, health and active community	Health and Wellbeing Plan 2017-2021	Health and Wellbeing
2. Housing to meet our changing needs	Affordable Housing Action Plan 2015-2020	Economic Development	2. A prosperous and learning community	Ringwood Metropolitan Activity Centre Masterplan 2018 *Maroondah City Council Plan 2019-2020 Update	Economic Development
3.We can move around easily	Integrated Transport Plan 2015-2025	Transport	3. A vibrant and culturally rich community	Arts and Cultural Development Strategy 2020-2025	Arts and Culture
4. Safe and secure	Knox Municipal Emergency Management Plan 2019-2022 Climate Change Response Plan 2012-2022	Emergency Management	4. A clean, green and sustainable community	Sustainability Strategy 2016-2020 Climate Change Risk and Adaptation Strategy 2018/19-2021/22 Environmentally Sustainable Design Policy for Council Buildings 2017	Environment and Sustainability
5. We have a strong regional economy, local employment and learning opportunities	Knox Central Structure Plan 2017	Economic Development	5. An accessible and connected community	*Maroondah Road Management Plan 2017	Infrastructure and Assets
	Draft Arts and Cultural Plan 2012-2022	Arts and Culture		Croydon South: Our 20 Minute Neighbourhood	Health and Wellbeing
				*Maroondah Road Management Plan 2017	Transport
6. Healthy, happy and well	Key Life Stages Plan 2017-2021 *Liveable Streets 2012-2022	Health and Wellbeing	6. An attractive, thriving and well- built community	Maroondah Housing Strategy 2016 *Melbourne East Regional Plan	Economic Development
7. We are inclusive, feel a sense of belonging and value our identity	Community Access and Equity Implementation Plan 2017-2022	Equity and Inclusion	7. An inclusive and diverse community	Disability Policy and Action Plan 2019-2021	Equity and Inclusion
8. We have confidence in decision making	Knox Planning Scheme Review 2018 Community Engagement Policy 2019-2022 *Knox Communication Plan 2018-2021	Governance	8. A well-governed and empowered community	Municipal Emergency Management Plan 2020-2023	Emergency Management
				Maroondah Planning Scheme Maroondah Community Engagement Policy 2015-2019	Governance

TABLE 3-1 SAMPLE OF COUNCIL POLICIES AND PLANS FOR EVALUATION

3.2 LITERATURE REVIEW – COMMUNITY RESILIENCE MEASUREMENT AND INDICATOR SCHEMES

The Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) was produced with the intention of it being used by local government to guide and evaluate the implementation of community resilience. As mentioned, it was developed from a process that involved consultation with a range of government and non-government organisations. It was informed by a number of mainly Victorian Government publications that are listed for Further Reading on page 46 and its User Guide aligns closely with the Victorian Indicators Project (Wiseman, J., et al, 2006). Even so, while the EMV Community Resilience Framework provides a ready-made and potentially useful tool to operationalize community resilience, there may be value in looking more broadly at the academic evidence in this area to see whether other models can add value. Therefore, the ACREProject aimed to look at council policies, not just through the lens of the EMV Community Resilience Framework, but to take account of other sources, particularly from the academic literature, that can potentially inform policies to support and enhance community resilience. To do this, a literature review of key resilience studies was conducted. The outcomes of form the basis of an alternative or enhanced thematic evaluation framework the RR Framework (Figure 3-3). Both Frameworks were used to evaluate the Maroondah and Knox City Council policies.

This literature review focused on studies that aim to understand how to operationalise resilience. This review is broad and while a number of overseas studies are included, it favours Australian research in order to keep information as locally relevant as possible. In addition, relevant Bushfire and Natural Hazards Cooperative Research Centre sponsored work is included, noting its mission to span the gap that so often exists between research and policy. Studies that involved the development of measurable indicators were found to be relatively rare compared with those that developed models to identify and describe resilience characteristics and themes. Overall, many synergies were found between the studies that were reviewed. This is reflected in a degree of consistency or overlap between the two evaluation frameworks that is later confirmed in the findings shown in Figure 5-6 Bringing it all together.

During the decade prior to the 21st Century resilience research tended toward debate over a suitable definition of resilience. For example, the National Strategy for Disaster Resilience, (Commonwealth of Australia, 2011), does not include a definition. This can be problematic when trying to apply resilience in public policy. Governments need to be able to define what they are seeking to achieve in order to decide on the allocation of funding and other resources and to otherwise target investment. Further, effective policy relies on review and evaluation to assess its impact and to determine whether the investment has provided value for money. It is thus, no coincidence that resilience research, including in Australia, has placed a high priority on the development of models and indicators of resilience that can be used to define and measure its characteristics. An increasing focus by researchers on identifying ways of operationalising resilience has coincided with the widespread adoption of resilience into public policy development.

The research studies that have been reviewed were chosen because they align with the idea that disaster resilience is embedded in a holistic view of community resilience. This is consistent with how it is depicted in the Victorian Community Indicators Project (ibid) and the Communitiy Resilience Framework Emergency Management (Emergency Management Victoria, 2017. This is a distinct change from the traditional view where disaster resilience was treated as interchangeable with risk management. 'It is time to supplement the traditional risk and hazard approach with a community-centric approach that incorporates community development principles and focuses on consequence management, …' 'This will require a policy shift from risk and hazard to a more community focussed approach' (Emergency Management Victoria, 2017, p.20). This literature review is conducted from a similar strengths-based perspective.

3.2.1 Resilience measurement research

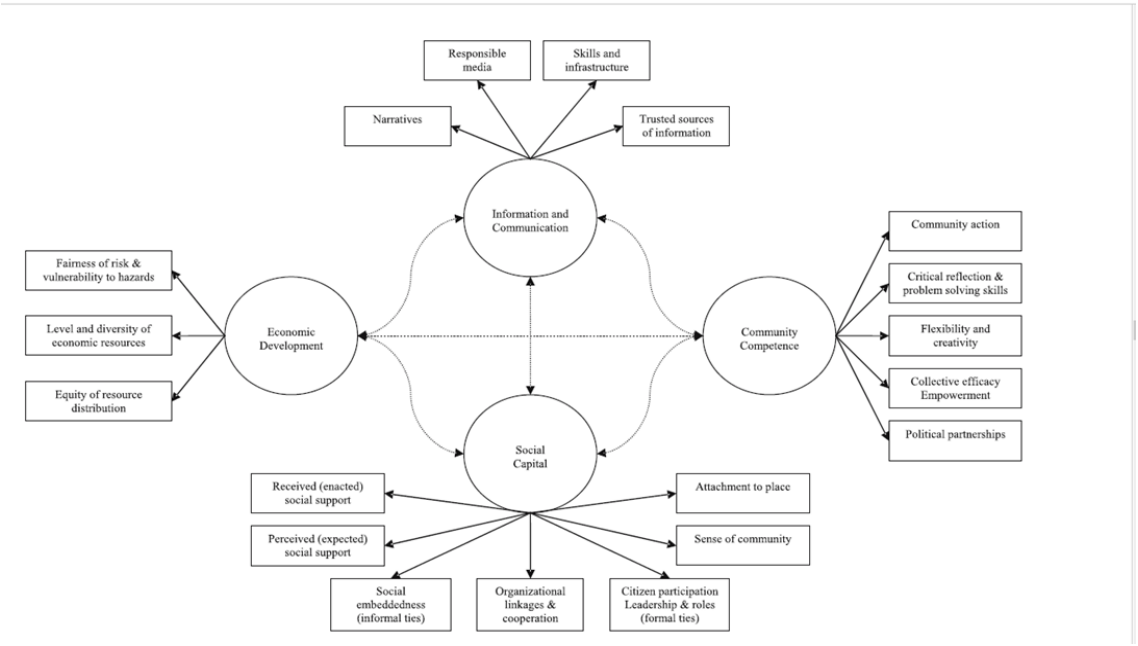


FIGURE 3-1 COMMUNITY RESILIENCE AS A SET OF NETWORKED ADAPTIVE CAPACITIES (NORRIS ET AL, 2008).

The work of Norris et al (2006) is seminal. It shifted the description of resilience as an individual quality to one that could be applied to communities and in situations of disaster or shock; it has a focus on health and well-being; and it is widely recognised as a high-quality study that has been cited thousands of times.

Norris proposed four domains of community resilience, being social capital, community competence, information and communication and economic development.

Each of these four contain elements that Norris labels 'resources'. In this project the resources developed by Norris have been adapted with characteristics from other models that have similar meanings to create the RR Framework.

One area where the Norris model is inconsistent with the EMV mergency Management Victoria CR Framework is the importance it places on addressing vulnerability as a way of enhancing resilience. There is a strong case for an equal, if not greater focus on building the strengths of a community compared with identifying and reducing vulnerability. Vulnerability is regarded by some as the

antonym of resilience (Norris, 2008) and something that must be countered in order to build resilience: 'the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards' (United Nations International Strategy for Disaster Reduction, 2019). This can have a bearing on how a disaster resilience policy is implemented which while important to do, can obscure the role of identifying the strengths of communities and building on these as a way of inoculating against the negative impact of adverse events. The latter position was supported by Buckle who argued that vulnerability and resilience are linked but not opposite and 'it is critical that resilience be given priority. Achieving resilience is positive. Reducing vulnerability is reactive' (Buckle, 2001 p.6). Later, Richardson concurred when he talked about the complementarity of resilience approaches that identify and build strength and capacity with those that reduce vulnerability (2017).

Cutter's earlier work focused on vulnerability but later appeared to move away from this when she suggested that vulnerability could be managed by strategies that include capacity assessment and support (Cutter et al., 2008). This idea of resilience encompasses the notion of building a community's capacity to adapt and transform where the incidence and impacts are unknowable or uncertain; and is described as a strengths-based approach (Saint-Jacques et al., 2009). This positive approach was taken further by Obrist who recommended moving away from risk and vulnerability and proposed enhanced social resilience as a form of disaster mitigation (2010). The view that disaster resilience is a social phenomenon that occurs in response to adversity is consistent with the Australian Natural Disaster Resilience Index (ADRI). In the ADRI the major components of disaster resilience are adaptation and transformation (Parsons, 2016). Vulnerability, while not as prominent is also included.

Perhaps one of the earliest resilience frameworks that was developed specifically for direct policy and program monitoring and evaluation of disaster resilience and risk reduction projects was in the United Kingdom in 2009 (Twigg). Twigg's framework explained the relationship between disaster risk reduction and climate change adaptation. It proposed the central linked concepts of 'community' and 'community disaster resilience' as the overarching goal. Progress towards this goal was to be done by monitoring the various elements of disaster resilience.

Cutter deserves further mention for developing the Disaster Resilience of Place (DROP) model (Cutter et al., 2008b), followed by a methodology and indicators for measuring baseline disaster resilience (Cutter et al., 2010). However, the validity of some of these tools may be limited to their use within the locality for which they have been developed and may not be transferable to other countries, regions and communities: previously mentioned as an issue for the broader application of specific indicators. Sherrieb (Sherrieb et al., 2010) improved on the Norris model by using it to to develop indicators for social capital and economic development. This made use of locally available data and thus could be used at the smaller scale. Kulig et al. (2013) also expanded on Norris' model by developing the Index of Perceived Community Resilience (IPCR). The IPCR was tested in two fire-affected communities in Canada using a methodology that triangulated quantitative and qualitative findings drawn from

interviews, community profiles and a household survey. These findings corroborated Norris' model and, in addition Kulig proposed the sub-scales of leadership and empowerment, community engagement, and non-adverse geography. These sub scales aligned with two of the four community resilience adaptive capacities in the Norris model; social capital and community competence. They are included in the ACRE evaluation frameworks within the domains of Connected, Inclusive and Empowered, and Connectedness domains and in Reflective and Aware and Learning Enviornment domains. Saja (2018) devised a resilience Framework with five

Australian researchers assessed the conditions necessary to achieve social resilience at the community level and proposed the following six elements: knowledge of hazards, shared community values, established social infrastructure, positive social and economic trends, partnerships, and resources and skills (Buckle et al, 2003). A follow-up study in Australian communities found that disaster resilience could be created by empowerment of locals, that is local leadership, a local centre to provide a hub where representatives from various sectors can meet, as well as trust in government and the private sector, development and maintenance of networks that have linking characteristics, and open and inclusive communication to support stakeholder participation (Buckle 2006).

A social assessment framework for measuring community resilience was developed to determine local level priorities for government water management reform. It explored the relationships between the concepts of vulnerability, adaptive capacity and social resilience. This favoured an approach to build capacity to enable a community to adaptively respond to change instead of limiting the vision for change to the restoration of a pre-existing state (Maguire and Cartwright, 2008). Meanwhile, another study looked at community resilience from the perspective of Australia's Indigenous peoples and included the idea of communities as a system. Although this work did not deal specifically with disaster resilience it reinforced the idea that resilience is about community well-being, not vulnerability (Kirmayer et al., 2011; Kirmayer et al., 2012; Kirmayer et al., 2009).

In Australia, the Torrens Resilience Institute produced a toolkit for communities to self-assess their resilience to all hazards by using community-based data that is either readily available or generated by community meetings (Arbon et al., 2012). This produced a community resilience scorecard that was trialled in four communities. Feedback from the trials suggested that a resilience toolkit would be useful at household level (Arbon et al., 2013). The Torrens Resilience Institute followed up with the development and evaluation of a Household Resilience Toolkit for community organisations to work through with potentially vulnerable households. The process involved identifying support networks and services on the basis of local government areas (Arbon et al., 2016). The evaluation found that those using the tool needed to better understand how disaster resilience is more about preparation than response and recovery. The Australian Red Cross RediPlan, while not explicitly about measuring disaster resilience, is a practical resource which households can use to check their level of emergency preparedness and to make improvements where needed. Uptake of this

resource is supported by a community program where volunteers host forums to encourage local residents to use the material (Australian Red Cross, 2016).

The Australian Natural Disaster Resilience Index (Bushfire and Natural Hazards Cooperative Research Centre and University of New England, 2020), draws on the Norris model and conceptualises disaster resilience as having adaptive and coping capacities. The project developed national level indicators that enable baseline resilience and changes in the level of resilience to be measured. Importantly, only indicators for which data is readily available have been chosen for inclusion in the index. The researchers have acknowledged that one of the biggest challenges in its development, and potentially to its application, is the mix of top-down and bottom-up data sources used to measure resilience. This is the first disaster resilience index to incorporate organisational and institutional factors and it lays the groundwork for the evaluation of national disaster resilience policy.

It consists of 9 resilience characteristics:

- Coping Capacity – social character, economic capital, emergency services, planning and the built environment, community capital and information access
- Adaptive capacity – Social and community engagement, Governance and leadership

Sections 3.2.2 – 3.2.5 provides some information from the research and grey literature[ii] about the links between resilience and governance, social capital, community engagement and information and communication. These areas are highlighted because they are an important point of difference between the two evaluation frameworks.

3.2.2 Governance

The context for local government policy development and implementation is dictated by complex factors including but not limited to federal, state and local laws and regulations, their constituent demographics and socio-economic, environmental and political factors.

The relationship between local government policies and how they are implemented is interdependent. Thus, while this project is not evaluating the outcomes or impacts of the council policies per se, an effective evaluation framework needs to be flexible enough to be apply to all stages of the policy cycle (See Figure 2-1).

Governance provides the context and mechanisms for policy implementation. It is defined as: 'Regimes of laws, rules, judicial decisions, and administrative practices that constrain, prescribe, and enable the provision of publicly supported goods and services' (Lynn Jr et al., 2001 p.7).

The principles of good governance that support community capacity and resilience are 'legal authority, transparency, accountability, inclusiveness, and agreed priorities' (Buckle, 2006 p.99). Thus, disaster governance research, while in a relatively early stage of development is an important field to consider for the development of theACRE in Local Government Policies. Some of the

characteristics and challenges in disaster governance are common to environmental governance and collaborative governance; in particular the multi-scale nature of disasters and the difficulties that are inherent in organising effectively to deal with risk and uncertainty (Tierney, 2012). Longstaff developed a preliminary conceptual framework for resilience in community systems comprising ecological, economic, physical infrastructure, civil society and governance subsystems. She noted the importance of assessing the effectiveness of governance in terms of how it operated within a system, not in isolation because 'competing governing entities can undermine the functions of the system' (2010 p.13). Direct links have also been made between governance and resilience in the work of the New Zealand Resilience Governance Research Programme where a number of case studies highlighted the need for an enhanced focus on building communication and trust between disaster agencies (Ivory, 2017).

Certain theories of governance have features that are compatible with disaster resilience. In particular, adaptive, experimentalist, and collaborative governance models are identified as being compatible with resilience for disaster or emergency management (Hunt, 2019). Adaptive governance has also been advocated in recent years as a suitable approach to the implementation of environmental policy (Folke et al., 2005) and is defined as: 'A range of interactions between actors, networks, organisations, and institutions emerging in pursuit of a desired state for socio-ecological systems' (Chaffin et al., 2014 p.2) that involves, among other things, 'devolution of management rights and power-sharing that promotes participation' (Folke et al., 2005 p. 449). Experimentalist governance emphasizes evidence-based decision making and encourages evaluation and learning. It also acknowledges that the context for implementation is a critical part of this process (Mulgan, 2013). Collaborative governance is governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets (Ansell and Gash, 2008 p.544).

When discussing approaches to policy implementation conducive to resilience, the debate about top-down versus bottom-up is also worth mentioning. Top-down policy implementation is developed at the top with the aim of achieving change at the bottom. By comparison, bottom-up approaches focus on understanding actor interaction and strategies for dealing with a policy problem in a specific policy sector, rather than the implementation or 'carrying out' of a policy per se (Sabatier, 1986 p.36). This is because, in terms of risk assessment and risk management, there is substantial variation between localities. A shared meaning and understanding of events and experiences is more likely to be generated from a combination of top-down and bottom-up approaches, which is also consistent with community engagement goals (Australian Institute for Disaster Resilience, 2013; Eversole, 2011; Head, 2007b).

The principles of localism and subsidiarity have also been highlighted as important within multi-level governance systems, including Australia's federal arrangements (Hunt, 2019). Localism refers to the devolution of power and/or functions and/or resources away from central control and towards front-line

managers, local democratic structures, local institutions and local communities, within an agreed framework of minimum standards (Evans, 2013 p.405). Subsidiarity aims to ensure unity while preserving diversity by determining that governance arrangements should be devolved wherever possible (Fenna and Hollander, 2013). Subsidiarity is a key organising principle for federalism that is particularly relevant for local government insofar as it teaches the primacy of smaller social units (individuals, family and communities), over state or higher-level authorities within the social system. Indeed, nested models based on subsidiarity, which is closely aligned with disaster resilience, are less effective than Top-down approaches for climate change adaptation (Marshall, 2008).

Importantly, decision makers, planners and practitioners need to be careful to differentiate between authentic subsidiarity and non-authentic subsidiarity or quasi decentralization which presents as an outward appearance of the devolution of power and responsibility to lower levels. However, it does not have the necessary regard for equal status and power in the relationship (Marshall, 2008), or capacity building, which includes making sure funding is provided at the level where it is needed and where it is spent (Zurita, 2015). Some researchers claim that subsidiarity is either a principle of social and community governance, or it relates to the balance of power in the constitution (von Borries and Houschild, 1998; Van Hecke, 2003). The latter is directly applicable to federal arrangements while the former has a broader social application. However, rather than being mutually exclusive, the two conceptualisations of subsidiarity are complementary and both have a place in Australian forms of governance to support the effective implementation of disaster resilience policy (Hunt, 2017). Thus, subsidiarity was included as a sub-category in the RR Framework.

Generally, an authentic application of subsidiarity would reflect a combination of top-down and bottom-up approaches. In terms of roles and responsibilities, the enaction of subsidiarity would see local and regional authorities granted more autonomy, resources and authority for decision making and management of locally impacting policies. At the same time, we would see a central authority retain a leadership role. Ideally, its functions would take the form of ensuring quality data collection, high standards and benchmarking, as well as sharing and coordinating resources to assist other levels of administration to execute their responsibilities efficiently and effectively (Head, 2007a).

3.2.3 Social capital

Social capital (Figure 3-1) is one of the four dynamic adaptive capacities for community resilience (Norris et al, 2008). Social capital, involves investment in social relations with expected returns (Lin et al, 2017, p.6). It relies heavily on trust (Australian Productivity Commission, 2003) and is enacted by social support, and organisational networks, linkages and cooperation, attachment to place, a sense of community and community participation and leadership (Norris et al, 2008). Volunteering is a manifestation of social capital and is an activity that builds community and disaster resilience. The impetus for volunteering comes from a sense of physical and social attachment to one's local community. A number of issues around volunteering are a central concern to local government and becoming more so. This is due to changes in volunteer trends and evolving

responsibilities in disaster managerment across levels of government and civil society.

Unpaid volunteers comprise 88 percent of the Australian emergency services. Of the remaining 12 percent, approximately 10 percent of these are full-time professional employees and two percent are part-time paid staff (AFAC 2016, page 8). In Victoria there are approximately 100,000 volunteers in the emergency management sector (The 3 V's Interim Report, Emergency Management Victoria, 2017 p.6) and most serve in the local area in which they reside.

The Australian research in this field has highlighted decreasing numbers of volunteers and other changes in patterns of volunteering. For example, younger people are less likely than the former generation to seek to commit to an established volunteer organisation and prefer to volunteer more selectively, perhaps for a specific cause. This may mean opting for temporary rather than permanent volunteering. Add this to the dwindling numbers of existing volunteers as the population ages and it raises concerns for the future sustainability of an emergency services workforce with such a heavy reliance on volunteers (McLennan et al, 2016)

The emergency services are often described as 'first responders' but it is often local people and those who are proximal to an emergency or disaster who have traditionally been first on the scene to render assistance (Mileti 1999, Tierney, Lindell and Perry 2001 in (Steffan 2009 p30). Moreover, this spontaneous form of volunteering is increasing while the number of traditional emergency volunteers is declining (Fernandez 2006).

Spontaneous volunteerism refers to:

> *'The activities of people who work outside of formal emergency and disaster management arrangements to help others who are at risk or are affected by emergencies and disasters. Such volunteerism may take place before, during or after an event. Informal volunteers may participate as individuals or as part of a group, on a short or longer-term basis, regularly or irregularly, and in situ or ex situ. Their participation may be spontaneous or unplanned, or deliberate or carefully planned '{Whittaker 2015. P)*

While there are barriers to the uptake of spontaneous volunteers there is evidence that the phenomenon is inevitable and it is increasing (Commonwealth of Australia, 2015) The style of governance and leadership of spontaneous volunteers is decentralised (McLennan et al, 2016) occurs when people, usually local, take responsibility. For example, following the Black Saturday fires in 2009 22,000 people offered to assist via an on-line facility set up by the Victorian Government (although a very small number were used) (Australian Red Cross, 2010, p2) Others in Victoria joined a community-led movement called BlazeAid to help farmers rebuild and repair fences destroyed or damaged in the fires (Whittaker 2015).

3.2.4 Community engagement and community development

Community engagement and community development are practices that are integral to community resilience. They are also linked to the concept of

governance as a modality for policy implementation, in accordance with the discussion in the previous sub-section. This link is explicit in the Governance domain within the RR Framework. Less so in in the Democratic and Engaged domain, where it is implied only, via the Citizen Engagement sub-category of the EMV Framework. The concepts of Community engagement and Community development are expanded upon in the following sections to emphasise their role in practices that are relevant to local government and that build community resilience.

One particular study which was concerned with the direct implementation of disaster resilience policy identified principles for effective and sustainable community engagement in disaster management. These include good governance, adequate resourcing, integrated development, self-sustaining, change mechanisms and effectiveness (Coles, 2004 p.12-13). The theme of community engagement in policy implementation was raised again in relation to emergency powers in Australia for preventing the spread of serious communicable diseases (Bennett et al., 2012). Bennett emphasised that even though legal, regulatory and administrative arrangements are critical in federal and state governments, they are rendered impotent without a simultaneous process for ensuring community engagement and cooperation. In 2013 Adger stressed the importance of community engagement to support the implementation of climate change adaptation policy at very small scales so as to take cultural values and psychological well-being into account (Adger et al., 2013).

The idea of community engagement as a form of policy implementation that can be employed to build disaster resilience goes hand in hand with the concept of community development. Community development was first defined as a 'process of developing the community field' when the field represents 'the capacity of local residents to work together for their own well-being' (Wilkinson, 1972, cited in Wilkinson, 1991 pp.87-88). Its value lies as much in the process as in the outcome. Community development will occur 'even if the external goal is not achieved' (Flora, 1998 p.493). Community development aims to produce positive change and transformation by fostering and harnessing community capacity. Community development relies on people's sense of attachment to their community which can be based on shared geography and physical location or cultural and social ties. Community development facilitates community competence, which is the transformation of social or community capital into place-based capability and action (McClenaghan, 2000). Kretzmann and McKnight refer to this as 'asset-based community development' a strengths-based approach for building community resilience (Kretzmann and McKnight, 1993 pp.1-6).

3.2.5 Information and communication

People need to have appropriate knowledge and skills to share responsibility for disaster resilience. Importantly these qualities need to be translated into action. To take this step requires a sense of confidence in one's ability to succeed. These concepts largely belong to the field of psychology where they may be described as agency, self-efficacy or collective-efficacy (Bandura, 1977; Bandura, 1997; 2000; 2006; 2010). Government policies in one form or another seek to change

behaviour (Handmer and Dovers, 2013; Bridgman and Davis, 2004). Disaster resilience policy is no exception and indeed is emphasized as a long-term goal (Commonwealth of Australia, 2011a; Commonwealth of Australia, 2012c). Behaviour change can mean taking personal responsibility by becoming more aware of one's disaster risks and and taking steps to mitigate these risks before a disaster rather than solely depending on the emergency services when a disaster happens. It may mean property owners make it a higher financial priority to have adequate insurance or state and local governments work with developers to prevent construction in hazard prone areas etc. Such behaviours require a sense of self-efficacy or collective efficacy. While information, effectively communicated is necessary to achieve certain behaviour, there is little evidence that the provision of information alone will translate into behavioural change (Paton, 2003; Australian Institute for Disaster Resilience, 2010). Instead, educative approaches are needed that are supported by research about how to successfully achieve behaviour change. It is known that progress toward change occurs in psychological stages and education programs should incorporate strategies to address each stage. For example, a 'preparedness conversion' {Dufty, 2008 #504 p.18} requires the initial harnessing of anxiety to encourage preparation. This is followed up with strategies tailored to the response, relief and recovery phases. Later, mitigation behaviour is promoted, then adaptive capability and finally post-disaster learnings.

3.3 DEVELOPMENT OF THE LOCAL GOVERNMENT POLICY EVALUATION FRAMEWORKS

Community resilience and disaster resilience themes were broadly scoped in the early stages of the project drawing on the resilience themes and characteristics found in the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) and in the literature review. From this a dual coding system was developed consisting of the EMV Framework (Figure 3-2) and the RR Framework (Figure 3-3). The RR Framework combines elements of the EMV Framework with aspects of resilience taken from the research. Table 3-2 lists the key themes and terms that were used to guide development of the evaluation frameworks. They are colour coded to show whether they were sourced from the Community Resilience Framework for Emergency Management (ibid) or from the resilience literature review.

Table 3-2 Legend: Community resilience for disasters – List of key themes and terms

7 Community resilience characteristics from the User Guide (EMV Victoria. 2017, pp 36-42)

Other terms found in the User Guide (EMV Victoria. 2017, pp 36-42)

Other key terms (EMV Victoria, 2017, pp 1-35)

Terms obtained from the literature review

Community Resilience Framework for Emergencies, Emergency Management Victoria (EMV), 2017, User Guide, pages 36-42. (*wild card includes variations of the same word)		
7 Community Resilience Characteristics		
Connected, inclusive & empowered	Sustainable built & natural environment	Reflective & aware
Democratic & engaged	Culturally rich & vibrant	Safe & well
Dynamic & diverse local economy	Connect* community & connect*	Inclusive
Empower*	Diverse*, diverse & economy*, economic development	Sustainable
Built environment	Natural environment	Health, health + wellbeing
Business continuity planning (BCP)	Jobs, employment, income	Skills + learning + education
Transport, transport links	Housing, social housing	Communication, communication infrastructure, communication + internet, internet access
Art, arts and culture	Leisure, sport	Recreation
Democracy*	Citizen engagement, citizen participation	Community participation
Volunteer*	Youth + engagement	Emergency management, emergency + plan*, emergency management + plan*
Mitigation	Infrastructure, assets	Shared responsibility, self-organisation
Community, resilience, community resilience	Prepare*	
Community Resilience Framework for Emergency Management – EMV (pages 1-36)		
Community led, community centred	Community development	Behaviour change
Change + Management	Coordinate*	Risk, risk management
Governance	Services + available* + access*	Hazard
Community + strengths	Partner*	Self-reliance
Adaptation	Resilience planning	Capacity building
Governance, effective + governance, good governance	leadership	network*
Other community resilience frameworks and characteristics		
Social capital	Community competence	Trust, trust + information
Transparent*	Attachment to place	Stakeholder engagement, community engagement
Governance	Networks	Leadership
Self-efficacy, Collective efficacy	Shared risk allocation, fair and equitable	Local awareness of risk
Resource distribution, fair and equitable	Resilience narratives	Trusted information
Behaviour change	Skills and infrastructure	Security
Multi-directional information flow	Partnerships	Economic diversity
Power sharing	Coordination	Capacity building
Open access to information	Stakeholder engagement	Negotiated roles and responsibilities
Subsidiarity		

TABLE 3-2 COMMUNITY RESILIENCE FOR DISASTERS- LIST OF KEY THEMES AND TERMS.

FIGURE 3-2 EMV RESILIENCE EVALUATION FRAMEWORK.

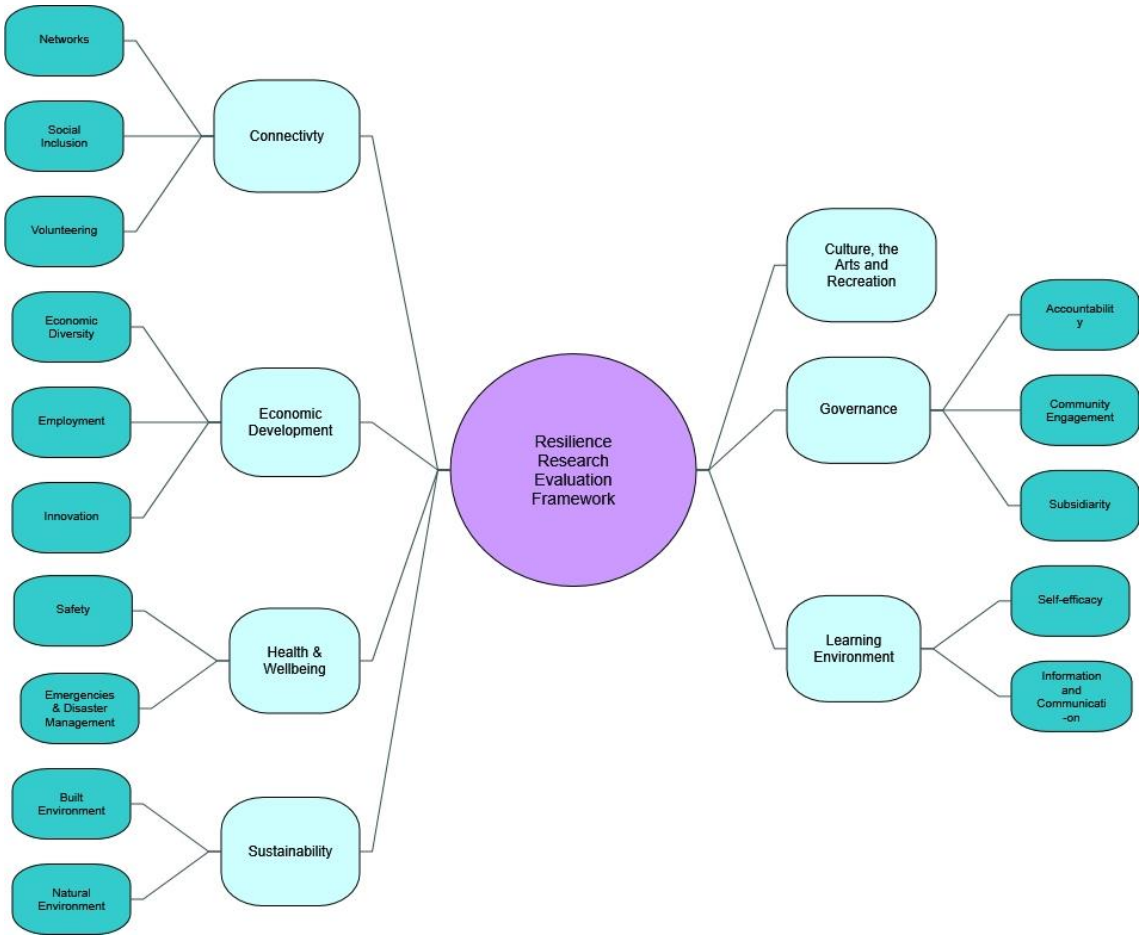


FIGURE 3-3 RESILIENCE RESEARCH EVALUATION FRAMEWORK.

3.3.1 Classifying the policies – case classification

Maroondah and Knox City Councils' policy documents are the investigation subjects and are referred to as cases. Each of the 32 council policies is one case. To organise the project data so that it could be analysed to answer the research question, it was classified according to pre-determined categories. Under the broad classification of 'policies' each policy is categorised as either Maroondah, Knox or Regional East Metropolitan. The Regional East Metropolitan category has only one case, the Melbourne East Regional Plan. It is the only policy in the sample of policies selected for evaluation that applies to both Maroondah and Knox because both are members of the Eastern Metropolitan group of councils.

Maroondah was then assigned eight values that correspond to its existing eight Community Outcomes plus an extra 'Strategic' Outcome. Similarly, Knox was assigned eight values that correspond to each of its existing eight Goals plus a 'Strategic Goal'. Each Maroondah and Knox policy were also classified to one of ten 'Functional categories' as featured in Table 3-1. Other values that were included in the project classification include year of publication and a field that indicates whether or not the policy incorporates an implementation or action plan. Table 3-3 provides a simplified version of the project classifications. For further details see the Classification Sheet at Appendix 3.

Case classification	Attributes	Values
Policies (n=15)	Knox City Council	Strategic Goal plus Goals 1 - 8
Policies (n=15)	Maroondah City Council	Strategic Outcome plus Outcomes 1-8
Policies (n=1) (Melbourne East Regional Plan)	Maroondah City Council Knox City Council	Maroondah Strategic Outcome & Outcome #6, and Functional Category: Overarching Knox Strategic Goal & Functional Category Overarching
Policy documents (n=15+1)	Knox City Council	Functional categories (n=11)
Policy documents (n=15+1)	Maroondah City Council	

TABLE 3-3 OVERVIEW OF CASE CLASSIFICATIONS.

3.3.2 Answering the research question

The main research question asked: How do Knox City Council and Maroondah City Council policies support community resilience for emergencies? This was answered by asking the following secondary questions:

Maroondah City Council

a) To what extent do Maroondah City Council Polices align with the EMV Framework?

b) To what extent do Maroondah City Council Polices align with the RR Framework?

1. **Knox City Council**

   a) To what extent do Knox City Council Polices align with EMV Framework?

   b) To what extent do Knox City Council Polices align with the the RR Framework?

2. **How do the Maroondah and Knox City Councils' main functions (Functional Categories) align with:**

   a) the EMV Framework?

   b) the RR Framework?

4 FINDINGS

The findings highlighted how and where council policies are consistent with resilience. This was done by reading and analysing them through two similar, though separate but connected lens: The EMV Framework and the RR Framework. From this, two sets of data were obtained. The data sets consist of sections of text (referred to as references) that have been allocated to a resilience category or categories. The number of references is the main metric that is used to compare the data and to generate the findings

The data was cross tabulated using various policy classifications (For example, policy title, council title, council outcome or goal, council function). It then became possible to compare the numbers so as to infer relationships between the different variables for each of the two councils. The two different evaluation frameworks were also compared with each other to check the overlap, or sameness between each of their categories and where they differ. This will help councils to decide what framework or framework components best suit their policy objectives, in terms of sensitivity for assessing different resilience factors.

The main source of the project findings came from the results of queries or analyses that were done using NVivo 12.4. The metric that was used is the number of references or relevant pieces of text in each policy. NVivo counts these and maps where they have been coded, either in relation to the code resilience and its variants (in Figure 4-2, and Figure 4-5 or in relation to the codes that make up the two evaluation frameworks (Figures 3-2 and 3-3).

It should be noted that the diagrams or graphs in this section only show the results at the higher level ie for the domains or parent codes of each evaluation framework. Queries were also conducted to identify results at the lower level ie the sub-categories or child codes. Although not provided in diagrammatic form, some of these results are discussed if they were seen as significant. More detail could be provided as a supplement to this report if required.

Prior to exploring the data to answer the main research question introduced in Section 3.3.2, supplementary queries were done as a broad scene-setting exercise. These looked at the 1000 most frequent words (Figure 4-1) across all the policies and the prevalence of the term resilience and its variants separately in the Maroondah policies (Table 4-1) and the Knox Policies (Table 4-2)t.

4.1 COMMUNITY: THE MAIN GAME (FIGURE 4-1)

'Community' was found to be the predominant theme across both groups of Councils' policies. Moreover, this outcome remained constant when the analysis was done separately for each council. The concept of community is inherently consistent with resilience. The notion of community is regularly linked in the research to Social Capital from which are derived concepts of networks and connections. This translates into the Connected, Inclusive and Empowered characteristic in the EMV Framework and the Connectedness characteristic in the Resilience Research Frameworks.

4.2 RESILIENCE: WHAT'S IN A NAME?

The use of the term, resilience in local government policy, does not necessarily mean that resilience principles are being authentically applied and implemented.

Nonetheless, the extent that the term resilience has been incorporated into councils' polcy lexicon and the variation in its use across the different policy documents is instructive.

Thus, each of the council policies were searched for the term resilience and its variants, as well as for the context in which it was used. Tables 4-2 and 4-5 show which Maroondah policies and which Knox policies mention resilience and the number of times it is referred to in each.

Equally, if the term resilience is not used explicity in a policy, that does not mean that it does not support resilience and visa versa. Section 3.3 pointed this out by identifying the many factors, characteristics and themes associated with resilience. The links between actual resiience and this broader set of terms may not be well understood. This may result in under-recognising the existing capacity council policies have for generating resilience or over-estimating the capacity of a policy to enhance resilience merely because it uses resilience and related terminology.

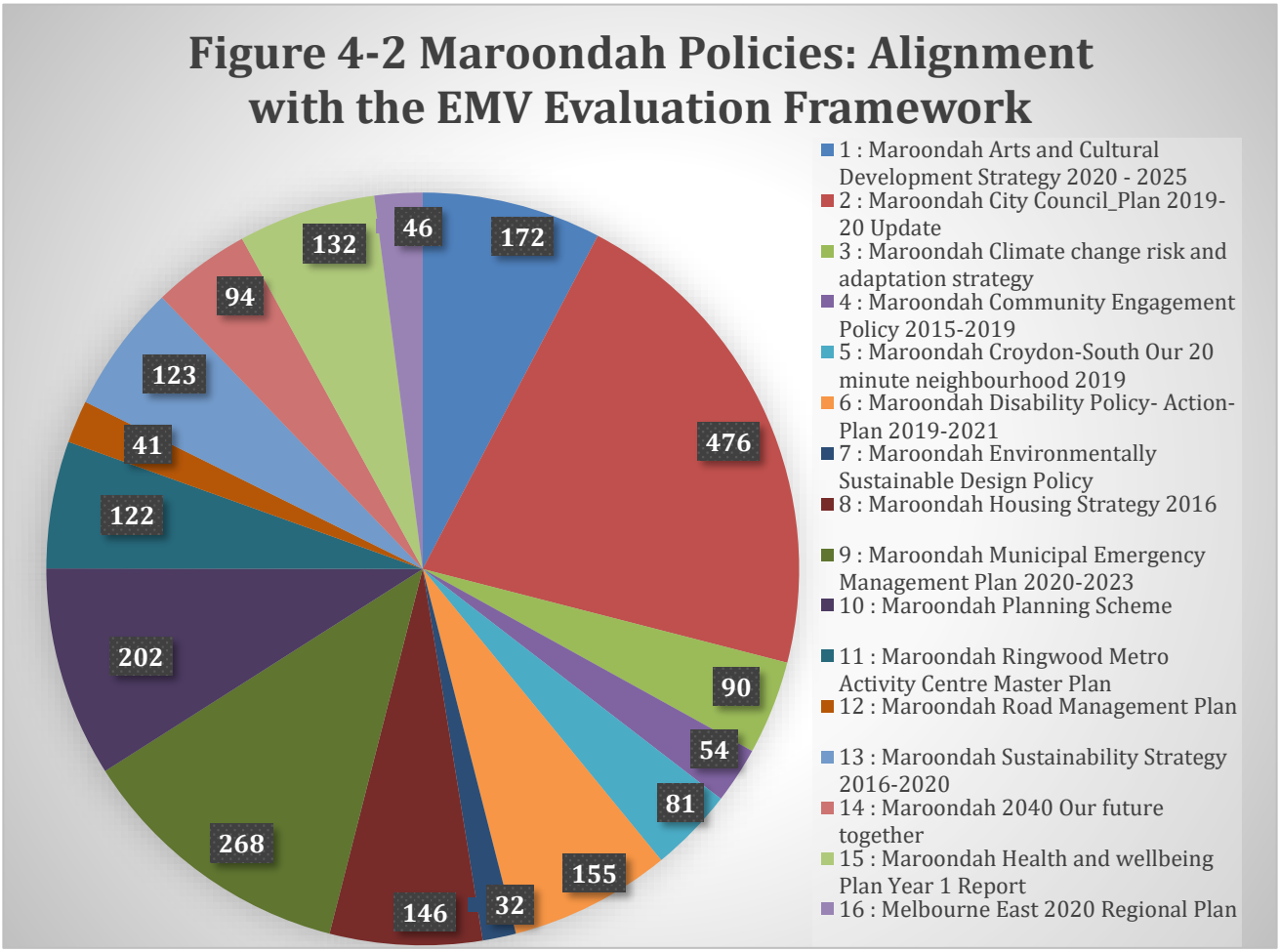
4.3 MAROONDAH CITY COUNCIL

4.3.1 Resilience: where it's at in Maroondah policies (Table 4-1)

Maroondah City Council Policies	Number of references to resilience
Melbourne East 2020 Regional Plan Part 2	0
Arts and Cultural Development Strategy 2020 - 2025	0
City Council Plan 2019-20 Update	2
Climate Change Risk and Adaptation Strategy	31
Community Engagement Policy 2015-2019	2
Our-20-minute-neighbourhood_2019	1
Disability Policy Action Plan 2019-2021	0
Environmentally Sustainable Design Policy	3
Housing Strategy 2016	1
Municipal Emergency Management Plan 2020-2023	9
Planning Scheme	8
Maroondah Ringwood Metro Activity Centre Master Plan	1
Road Management Plan	0
Sustainability Strategy 2016 -2020	9
Maroondah 2040: Our Future Together	6
Health & Wellbeing Plan Year 1 Report	1
Melbourne East 2020 Regional Plan Part 1	0
Total	74

Maroondah City Council policies make a direct reference to resilience on 74 occasions in 12 of the 16 policies that were sampled. Most of these (n=31) occur in the Climate Change Risk and Adaptation Strategy. The next highest number of 9 occurs in both the Sustainability Strategy and the Municipal Emergency Management Plan.

4.3.2 Maroondah City Council policies: alignment with the EMV Resilience Evaluation Framework (Figure 4-2)



A total of 2234 pieces of text or references from Maroondah policies were matched to the EMV Framework.

The Maroondah policies with the highest number of references coded to the EMV Framework is the Maroondah City Council Plan with 476 references. There is a considerable gap between this number and the next most frequent number of references in the Maroondah Municpal Emergency Management Plan with 268. It can be concluded from this that the Maroodah City Council Plan and the Municipal Emergency Plan are the policies most conducive to resilience across the board as assessed using this framework. The difference in frequency between these top two is relatively high and the Emergency Mangement Plan shares a similar position in the ranking with the Maroondah Planning Scheme with 202 references, noting that only pp.169-204 in this document (the part titled Municipal Strategic Statement) were reviewed.

The policy with the lowest number of references coded to the EMV Framework was the Environmentally Sustainable Design (ESD) Policy for Council Buildings (ESD Policy) (n=32) followed by Road Management Plan with 41 references. This would suggest that, out of all of the Maroondah policies that were analysed, the ESD Policy and the Road Management Plan have the lowest level of adherence to resilience principles. The fact that the ESD Policy is relatively brief and the Road

Management Plan is more technically specific than many other policies and only mentions sustainability once). It may also explain, in what at first appears to be paradoxical, why the ESD policy has not been significantly linked to the Sustainable Built and Natural Environment code which is the second most frequently used code for Maroondah policies.

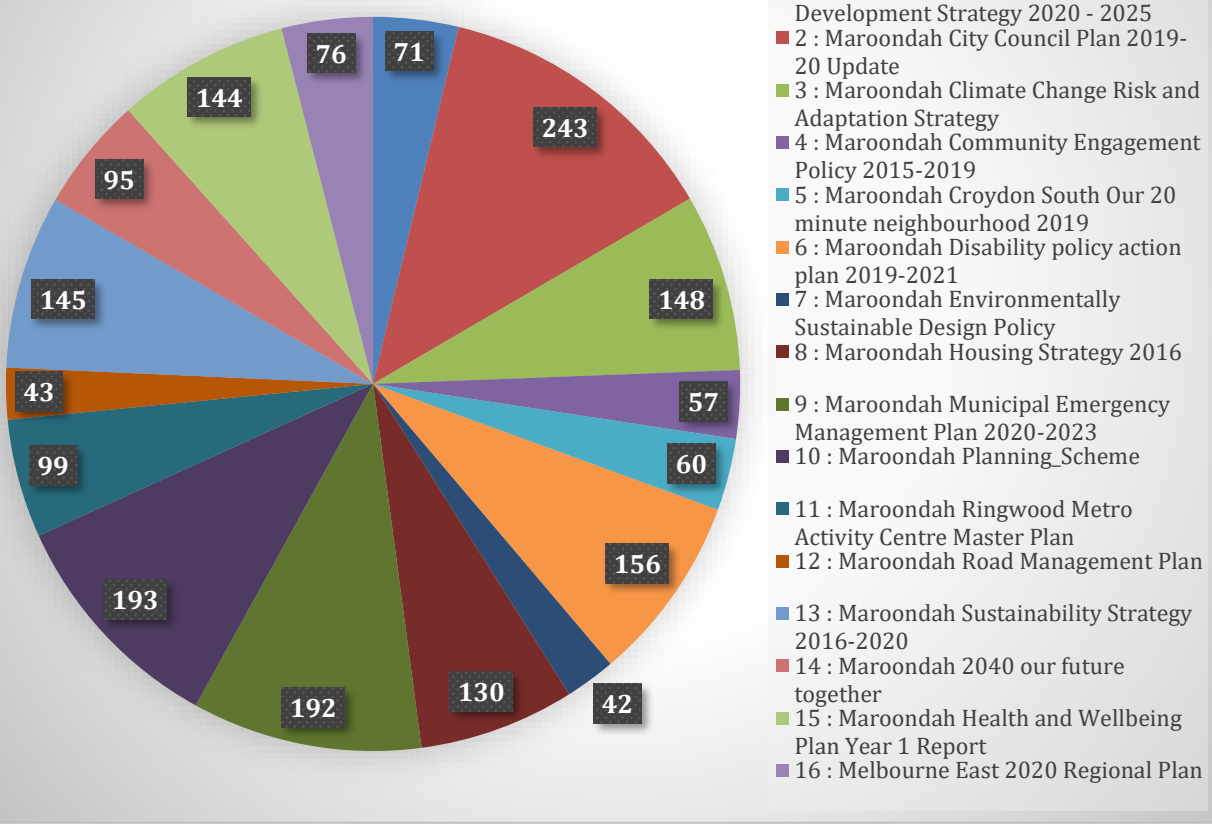
The Maroondah Community Engagement Policy has the next lowest relevance to the EMV Framework (n=54). The charactertisic that is most aligned with community engagement in the EMV Framework is Democratic and Engaged, particularl via its sub-category of Citizen Engagement. There is also some alignment with the domain Connected, Inclusive and Empowered. Given the significance of community engagement to resilience, its total number of references is lower than might be expected. On its own this is not a sign that the Community Engagement Policy is not consistent with resilience. This is likely because the policy content focuses mainly on the process of community engagement. At the same time the policy does make it clear that community engagement is core to all council programs, it just does not go into detail.

The same data query showed which codes were the most frequently and the least frequently used across the Maroondah policies. The two stand-out domains are the Sustainable Built and Natural Environment (n=487) followed by the Connected, Inclusive and Empowered (n=444). This implies that the resilience characteristics described by these two domains feature most commonly across Maroondah policies as a whole. This may be indicative of key policy priorities. The frequency of the application of the codes for the other five domains are all similar and range from 201 -297. Out of these, the issue that attracts comment is that out of the 290 occasions that policies were coded to Reflective and Aware, only 60 of these were matched to its sub-category of Emergency Management and Mitigation Plans. The Reflective and Aware code was applied where there was seen to be a commitment to evidence-based policy, and a willingness to revisit, research, evaluate, and review/update policy. The Reflective and Aware codes were applied more frequently (if only marginally more) to other Maroondah policies.

This result may imply that the Maroondah Municipal Emergency Management Plan does not reflect the principles of Responsibility and Aware and Self-organisation and Lifelong Learning. It may also indicate that other policies are more integrated with Maroondah policies as a whole than is its emergency management policy.

4.3.3 Maroondah City Council: alignment with the Resilience Research Evaluation Framework (Figure 4-3)

Figure 4-3 Maroondah Policies: Alignment with the Resilience Research Evaluation Framework



A total of 1894 references from Maroondah policies were matched to the RR Framework. The policy that yielded the most references was the Maroondah City Council Plan (n=243), followed by the Maroondah Planning Scheme with 193 references. The Environmentally Sustainable Design Policy for Council Buildings was the least referenced policy (n=42) followed closely by the Maroondah Road Management Plan (n=43). The Community Engagement Policy, similar to the result for the EMV Evaluation Framework had a relatively low number of references with 57. The Maroondah Community Engagement Policy was coded in its entirety to the sub-category Community Engagement, in the Governance domain and also to the Connectivity domain.

In all, and similar to the results for the EMV Framework, policy references were most commonly coded to Connectivity (n=407) and Sustainability (n=351). Interestingly, the Governance domain was a close 3rd, scoring 332. The remaining 4 domains ranged from 107-312, a greater range than was seen for the EMV Evaluation Framework. The high number of references for Governance (which includes the sub-category of Community Engagement) shows the importance of this domain and its sub-categories (the others being Acountability and Subsidiarity), highlighting the fact that the EMV Framework does not include Governance. Democractic and Engaged has some similarities but its differences

as interpreted in the ACRE Coding Scheme are significant. In addition, the EMV Framework was developed by the Victorian State Government for use by local government. This will in all likelihood account for it being a little more closely matched to the Maroondah policies than the EMV Resilience Evaluation Policy. It may also be the reason for the RR Framework results having more variation – it has not been tailored directly to local government policies which may give it more objectivity.

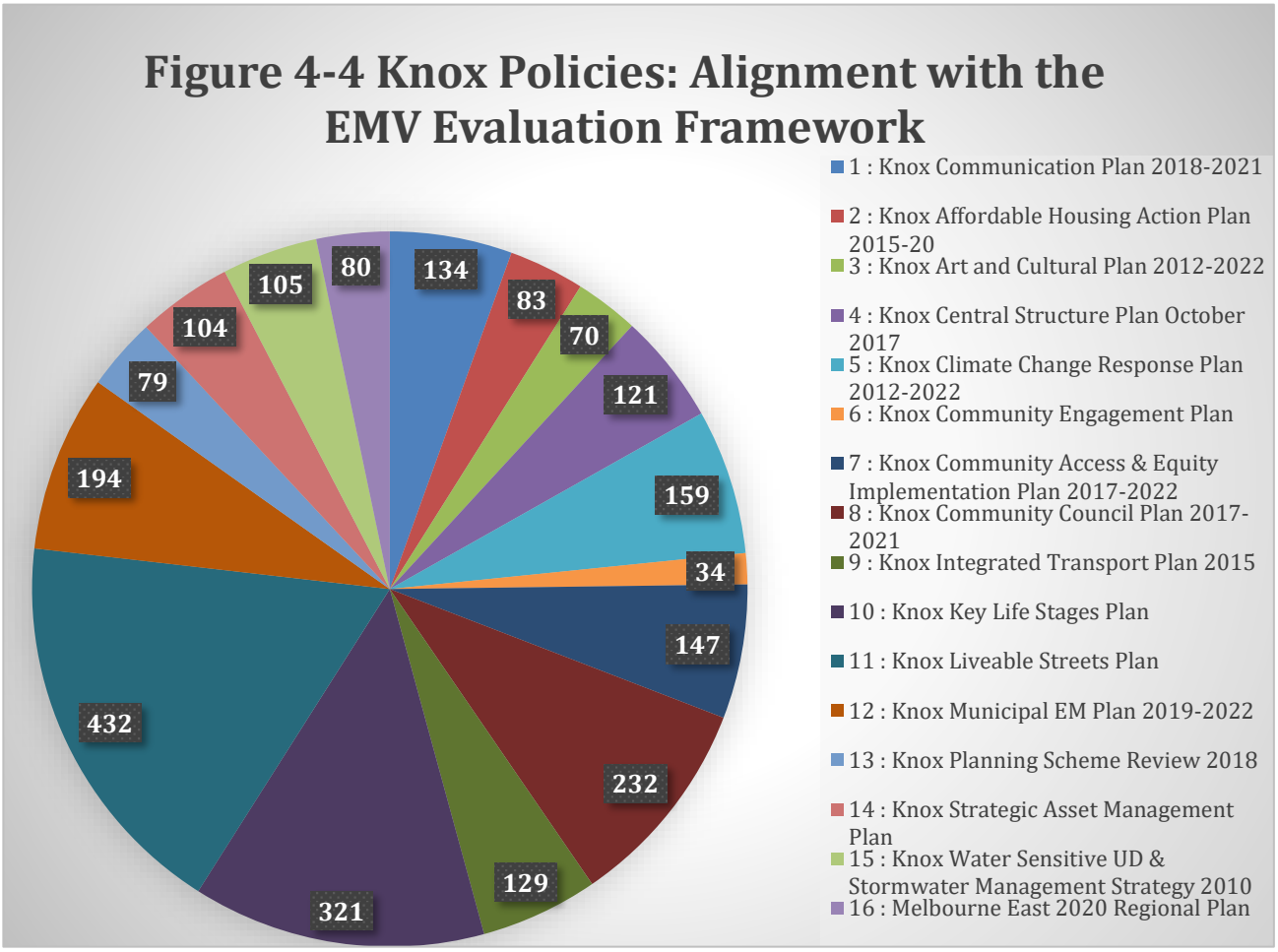
4.4 KNOX CITY COUNCIL

4.4.1 Resilience: where it's at in Knox policies (Table 4-2)

Knox City Council policies directly refer to resilience on 39 occasions in 7 out of a total of 16 policies that were included in the Knox sample. The highest number of mentions of resilience (n=16) is is in the Key Life Stages Plan followed by the Knox Municipal Emergency Management Plan that mentioned resilience 11 times.

Knox City Council Policies	Number of references to resilience
Communication Plan 2018-2021	0
Affordable Housing Action Plan 2015-2020	0
Arts & Cultural Plan 2012-2022	0
Central Structure Plan October 2017	0
Climate Change Response Plan 2012-2022	0
Community Engagement Plan V2 - 2019	0
Community Access & Equity Implementation Plan 2017-2022	1
Community & Council Plan 2017-2021	6
Integrated Transport Plan 2015	3
Key Life Stages Plan	16
Liveable Streets Plan	1
Municipal EM Plan 2019-2022	11
Planning Schem Review 2018	1
Strategic Asset Management Plan	0
Water Sensitive Urban Design & Stormwater Management Strategy	0
Total	**39**

4.4.2 Knox City Council: alignment with the EMV Resilience Evaluation Framework (Figure 4-4)



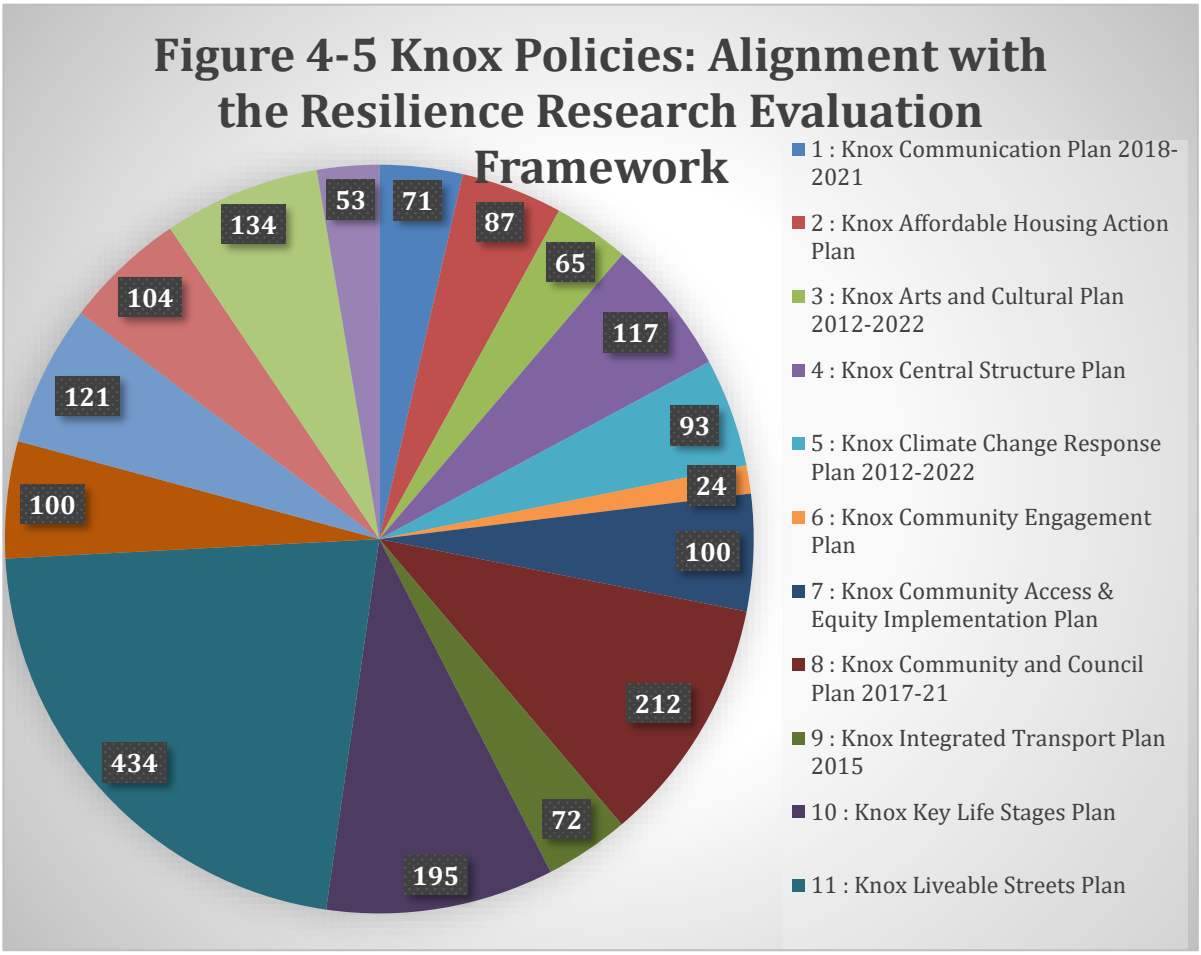
A total of 1554 Knox policy references were matched to the EMV Framework. The Knox policy with the most references was the Knox Liveable Streets Plan (n=440) followed by the Knox Key Life Stages Plan (n=280). The policies with the least references were the Knox Water Sensitive Urban Design and Stormwater Management Strategy 2010 (n=1) followed by the Community Engagement Plan (n=18).

The most frequently used code, as for Maroondah (above) was Sustainable Built and Natural Environment (n=293). The Liveable Street Plan provided 115 of these. This was closely followed by Connected, Inclusive & Empowered (n=283). Again, the Liveable Streets Plan was responsible for 82 of these references. These results would indicate that the Knox Liveable Streets Plan has a high level of adherence to resilience, particularly via the two characteristics of Sustainable Built and Natural Environment and Connected, Inclusive and Empowered.

The code that was applied the least number of times was Emergency Management and Mitigation Plans (n=42) followed by Culturally Rich & Vibrant (n=121). Again, Emergency Management and Mitigation Plans is a component or child code of the Reflective and Aware code. This means that the 42 applications of the Emergency Management and Mitigation Plan code are included in the total number of times that policy references were applied to Reflective and Aware, which is 186. Nevertheless, 186 is lower than the average

of 222 references per code. This is a similar result to that for Maroondah City Council as disussed above. For Knox, the same observations can be made that the alignment of its policies with the emergency management aspects of resilience is lower than expected and may indicate a less than optimal integration of emergency management policy into mainstream policies.

4.4.3 Knox City Council: alignment with the Resilience Research Evaluation Framework (Figure 4-5)



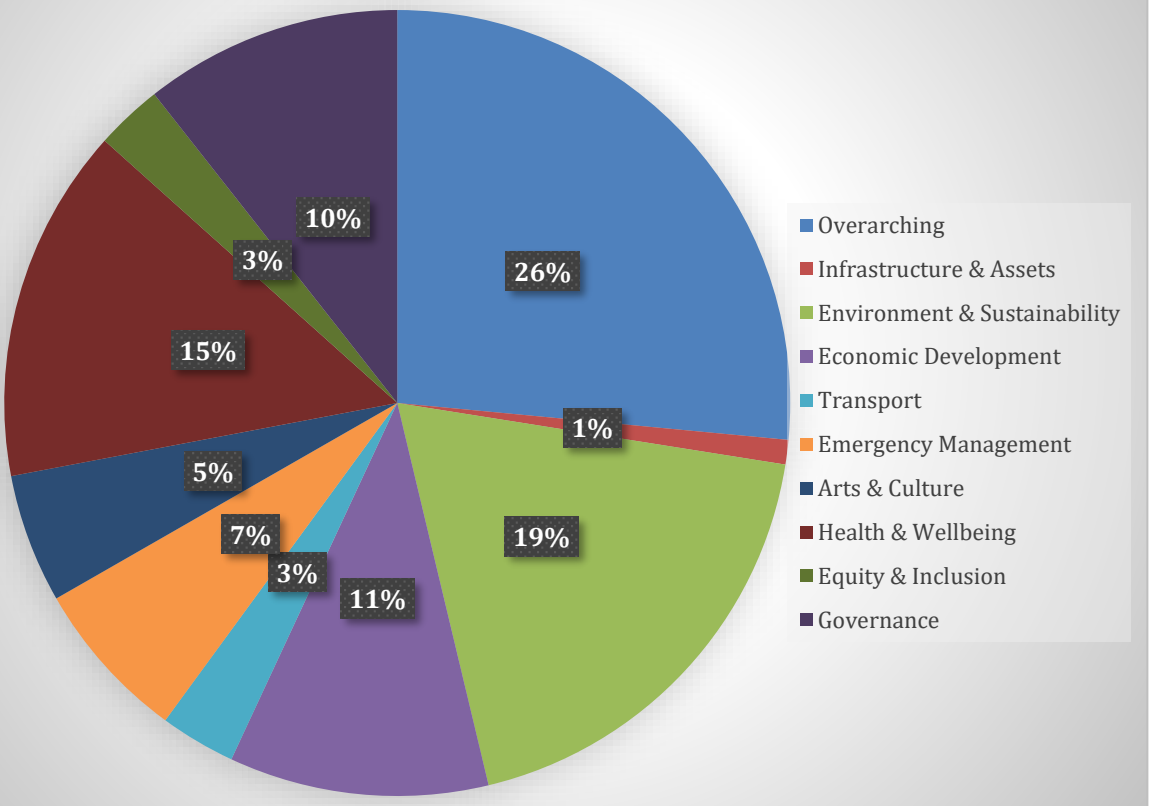
1517 references were mapped to this framework. Of these, the highest number was obtained from the Liveable Streets Plan (n=443). The policy that produced the least references was the Water Sensitive Underwater Drainage and Stormwater Management Strategy with 5 references followed by the Community Engagement Policy with 16 references. The most frequently referenced code was Connectivity with 327 followed by Health and Wellbeing with 255 applications. The least frequently referenced code was Emergencies and Disaster Management with 44 applications, followed by Arts, Culture and Recreation with 94 applications.

4.5 COUNCIL FUNCTIONS: ALIGNMENT WITH THE EMV RESILIENCE EVALUATION FRAMEWORK (FIGURE 4-6)

In Section 4.4 and 4.5 ten council functions, common to both Maroondah and Knox City Councils are examined in terms of their alignment to resilience in each

of the two evaluation frameworks. Analysing council functions in relation to the various domains of the two evaluation frameworks is a slightly broader exercise than the queries conducted in the previous sections. The results provide insights into the links between resilience and the scope of council activities rather than with individual council policies.

Figure 4-6 Council Functions EMV Resilience Evaluation Framework



Council functions were identified in terms of their points of connection with the EMV Framework. For the Overarching function, this occurs particularly via the domain of Connected, Inclusive and Empowered. The domains of Sustainable Built and Natural Environment and Democratic and Engaged are also picked up well in the Overarching function. The functions of Environment and Sustainability and Health & Wellbeing are relatively well associated with the EMV Framework, mainly, and as expected, via the Sustainable Built and Natural Environment domain and the Safe and Well domain, respectively. The council function that is least associated with the EMV Framework is Infrastructure and Assets.

4.6 COUNCIL FUNCTIONS: ALIGNMENT WITH THE RESILIENCE RESEARCH EVALUATION FRAMEWORK (FIGURE 4-7)

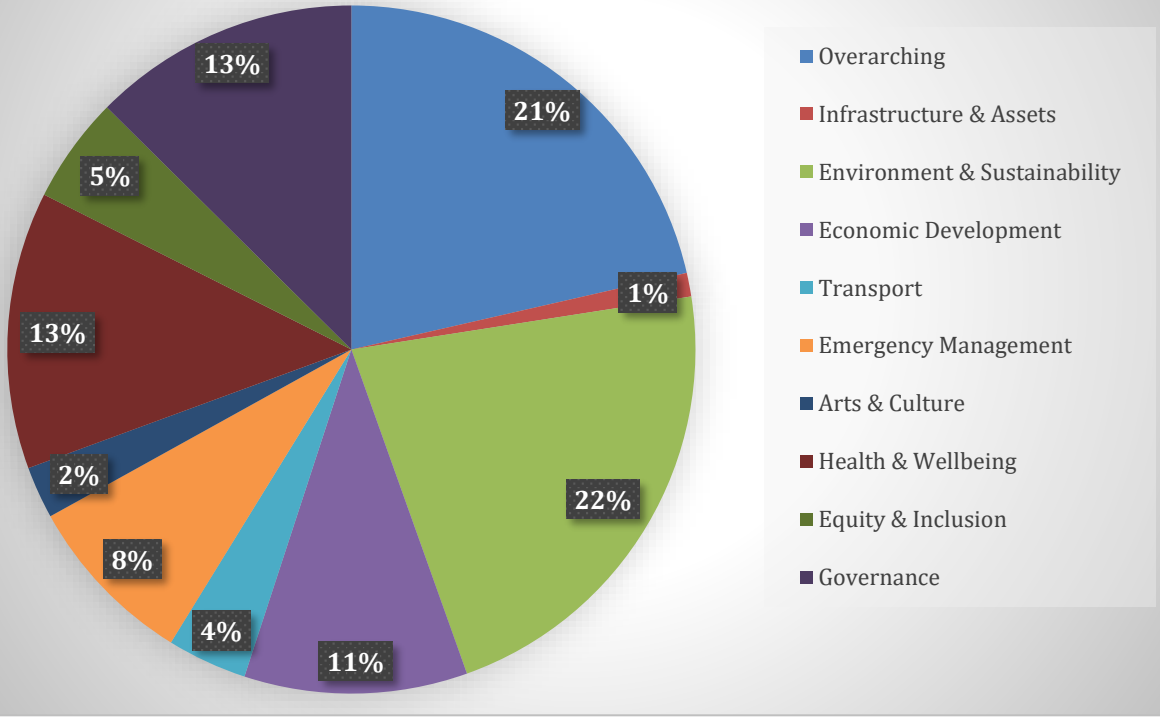
In this query council functions were mapped to domains in the RR Framework. The results were similar to those for Figure 4-8 with the marginally noteworthy difference being more adherence to resilience via the Overarching function in the EMV Framework (26%) compared with 21% for the RR Framework. This reinforces the observation that Overarching functions are cross cutting and

include a multitude of different activities that can potentially be linked to resilience

The most prevalent RR Framework domain that was mapped to council functions is Connectivity (n=680) followed by Governance (522). The least prevalent domains represented in council functions are Culture, the Arts & Recreation (n=201) followed by Economic Development (n=344).

The council function that is most strongly linked to the Resilience Research Framework is Environment and Sustainability (22%) (n=674), closely followed by Overarching (21%). As with the result for the EMV Framework, the council function that it is least associated with, is Infrastructure and Assets (8%), followed by Arts and Culture (2%).

Figure 4-7 Council Functions - Resilience Research Evaluation Framework



4.7 BRINGING IT ALL TOGETHER: SYNERGIES BETWEEN THE EMV RESILIENCE EVALUATION FRAMEWORK AND THE RESILIENCE RESEARCH EVALUATION FRAMEWORK (TABLE 4-3)

	Resilience Research Evaluation Framework							
EMV Resilience Evaluation Framework	Connectivity	The Arts & Recreation	Economic Development	Governance	Health & Wellbeing	Learning Environment	Sustainability	**Total**
Connected, Inclusive & Empowered	500	101	125	219	270	195	199	**1609**
Culturally Rich and Vibrant	150	195	55	41	99	74	94	**708**
Democratic & Engaged	257	43	69	329	172	202	140	**1212**
Dynamic and Diverse Local Economy	156	38	254	107	130	138	131	**954**
Reflective & Aware	214	28	64	266	184	239	205	**1200**
Safe & Well	218	77	88	154	407	172	145	**1261**
Sustainable Built & Natural Environment	385	96	186	269	317	173	420	**1846**
Total	**1880**	**578**	**841**	**1395**	**1579**	**1193**	**1334**	**8790**

Most overlap

Least overlap

Table 4-3 shows the degree of overlap or syergy between the EMV Framework and the RR Framework. The higher the number, the higher the agreement between the two frameworks. It gives a sense of where the evidence around resilience is incorporated in the existing EMV Framework. More broadly, this analysis will help councils to decide what resilience domains and subcategories need to be included in their own resilience policy evaluation frameworks or methods.

For both frameworks the Connected, Inclusive and Empowered domain and the Connectivity domain have the most in common. Next most compatible are the Sustainable Built and Natural Environment domain and the Sustainability domain. Safe and Well is also relatively consistent with Health and Well-being. This suggests that the existing EMV Framework is relatively consistent with the RR Framework in this domain. Thus there may not be significant advantage in modifying the existing EMV Framework in this domain. An exception to this may be in the area of Governance, which is fairly well aligned wth Democratic and Engaged. In Section 5 Discussion and Way Forward, nuanced but important differences

between the sub-categories of these two domains are identified. This suggests that the Democratic and Engaged domain should be updated to bring it closer into line with the Governance domain.

Councils may wish to review agreed meanings and definitions of the resilience characteristics where the numbers in Figure 4-10 are relatively low (ie the green shaded). Low numbers imply less or limited congruence between the two frameworks. These are the areas where the information from the resilience research could be better incorporated to improve councils' ability to develop, implement and evaluate policy in accordance with resilience. On the other hand, low numbers may reinforce the importance of retaining an existing local policy approach.

5 DISCUSSION AND WAY FORWARD

As described, the metric that was used to analyse the relationship between resilience and council policies is the number of pieces of text that were matched to the evaluation frameworks. These numbers are not meaningful in absolute terms. There is no benchmark or optimum number of resilience references. Rather, insights come from comparing the numbers across and between the policies and interpreting the numbers within an understanding of how they represent the ideas and concepts in the coding system (Appendix 2).

5.1 GOOD NEWS

Broadly speaking, most of Maroondah and Knox City Councils' policies demonstrated a direct association with resilience or the determinants of resilience. A report on Maroondah and Knox LGA's generated by the Australian Disaster Resilience Index (ADRI) shows both in the 'high capacity for resilience' category (Bushfire and Natural Hazards Cooperative Research Centre, 2020). This result could be viewed as corroboration that Maroondah and Knox's policies are making a positive contribution to resilience in their communities. From the perspective of state and federal government, being able to access data at the LGA level is a big step forward because it provides a level of detail not formerly available. Unfortunately, the ADRI does not have the granularity that would allow local councils to identify variations in resilience within their LGAs. A lack of highly localised data remains one of the unique challenges facing local government.

The most notable areas of resilience alignment of Maroondah and Knox City Councils' policies is in the domains of Connected, Inclusive and Empowered in the EMV Framework, and Connectivity in the RR Framework. In particular, this occurs within the sub-categories of Community Connectedness, Service Availability and Accessibility in the EMV Framework; and in the Networks, Social Inclusion and Volunteering sub-categories in the RR Framework.

The Maroondah Climate Change Response and Adaptation Plan includes a comprehensive risk assessment, with roles and responsibilities. This highlighted local council's propensity to be self-reflective and to be active in applying the evidence to develop tailored local plans. It also highlighted a commitment to self-reliance and shared responsibility. So, whilst the policy itself could be seen as solely about climate change, the fact that resilience is an ongoing process and not an end-state ensures both Maroondah's and Knox's climate change policies can be considered conducive to resilience. Both councils's climate change policies were coded to a range of different resilience charactersistics in both evaluation frameworks, including to the sub-categories of Emergency Management and Mitigation Plans in the Reflective and Aware domain and in the Emergency and Disaster Management sub-category in the Health and Wellbeing domain. This indicates that these policies are well integrated with other policies in terms of resilience.

5.2 GAPS

A discussion about the gaps identified by the ACRE project can occur from two perspectives: It can focus on where and how council policies don't link to the

characteristics in either or both of the evaluation frameworks. From another angle, ACRE found deficiencies in the frameworks themselves, in terms of their ability to identify aspects of council policies that are already supporting resilience.

As mentioned, according to both evaluation frameworks, the strongest policy links to resilience are via the domains related to connectivity. However, despite being a specific sub-cateory of Connectivity in the RR Framework, and Democratic and Engaged in the EMV Framework, volunteering is under-emphasised in council policy documents. Volunteering was also included in the Assessing Community Resilience User Guide (Emergency Management Victoria, 2017); and it is highlighted in the Victorian Community Indicator Project (Wiseman et al, 2016). NB that the Assessing Community Resilience User Guide adopted the indicators developed for the Victorian Community Indicator Project (ibid), with the exception of the 'Reflective and Aware' domain. Having said that, the value of volunteering may not be mentioned specifically, but it is implied in many of the references that have been matched to the Connected, Inclusive and Empowered domain.

A gap defined in the Australian Disaster Resilience Index as the 'presence and resourcing of emergency services' (BHNCRC 2020) is related to volunteers. A high proportion of the emergency services are community volunteers. The emergency services workforce is ageing and volunteer trends are changing. People are less willing to volunteer over the long term with one agency and it is becoming more difficult to retain volunteers. One of the solutions that has been proposed is to find ways to attract younger people to volunteering, particularly with the emergency services.

A growing trend in recent years indicates that fewer people, especially in younger age-groups, want to commit to an established volunteer organisation (Australia, 2016; Barraket *et al.*, 2013; Whittaker *et al.*, 2015) and prefer to volunteer in specific circumstances or events. This trend corresponds to the increase in non-traditional or informal forms of volunteering. Non-traditional or Spontaneous volunteering came to the fore in the aftermath of the 2009 Victorian bushfires and the 2010-11 Queensland floods. During these events Volunteering Queensland received around 100,000 offers of help from community members some of whom formed a 'mud army' to assist in the flood clean up. In Victoria, hundreds of citizens mobilised to perform community-led activities such as BlazeAid (George, 2013, Barraket *et al.*, 2013). Non-traditional volunteering has been highlighted by the federal government as an important area for state and local policy development and implementation because of its potential to offer additional capabilitiy during a disaster (Commonwealth of Australia 2015). However, there remain practical difficulties to overcome and, as yet, widespread uptake of this policy has not occurred, including in Victoria. Nonetheless, the research evidence is clear that non tradtional forms of volunteering are emerging as an increasing trend that will need to be managed, ideally for positive outcomes (McLennan et al, 2016). For this reason, it was included in the definition of volunteerism in the coding scheme for the RR framework. In spite of some apparent concerns around engaging informal volunteers for disaster response, there may be other ways that volunteers could be better utilised in disaster management. This could be achieved by taking a

more creative approach to volunteering and formalising these ideas into local government policies. For example, as well as in traditional roles, council policies could support volunteers to conduct disaster prevention and risk reduction activities. This may avoid some of the logistical, training and resourcing problems that have been raised as barriers to using spontaneous volunteers during a disaster.

Within the EMV Framework domain of Dynamic and Diverse Local Economy, the concept of economic diversity is not given adequate coverage. Nor have its benefits been made clear, for example, lower economic risk. This is at odds with the similar 'Dynamic and Resilient local economy' indicator developed for the Victorian Community Indicator Project (Ibid). Furthermore, Business Continuty Planning is a sub-category of the Dynamic and Diverse Local Economy domain, but is rarely mentioned across all council policies.

It was noted that Youth Engagement, a sub-category in the Connected, Inclusive and Empowered domain in the EMV Framework, was mentioned infrequently in Maroondah policies (n=30) and Knox Policies (n=31) Having said that, Maroondah City Council has two policies that focus exclusively on Youth Engagement[1],[2]. However, these were not included in the sample of policies that were evaluated.

The qualitative analysis software (NVivo) that was used in this project has a limitation whereby it cannot ascribe weighting to a document as a whole. Where this situation arose when coding the policies in the sample, the total page numbers of the document were counted as a proxy measure. If the Maroondah youth polices had been counted in this way it would have increased the total number of references from 30 to 69 which may not have made a substantial difference to the finding.

5.3 THE EMV FRAMEWORK VERSUS THE RR FRAMEWORK OR BOTH?

The links between Maroondah and Knox policies and resilience were slightly stronger for the EMV Framework (Emergency Management Victoria, 2017) than for the RR Framework. This could be related to stakeholder consultation (including with local government) on the development of the Community Resilience Framework for Emergency Management (EMV, 2017). However, this effect should not be over-emphasised as it would have been difficult to adjust council policies in accordance with this document in just three years.

The RR Framework has seven domains. These were labelled to align with the seven Community Resilience Characteristics in the EMV Framework because they were judged as appropriate at a local government scale. Having said that, many of the sub-categories of the RR Framework are broad rather than localised. The resilience research shows that broadly-based indicators are less likely to be

[1] Youth Strategy: Raising the wellbeing of Maroondah's young people, Maroondah City Council. 2017. At https://www.maroondah.vic.gov.au/files/assets/public/documents/strategies/youth-strategy-1.pdf Accessed 191020

[2] Youth Strategy Action Plan (2017-2019), Maroondah City Council. At https://www.maroondah.vic.gov.au/files/assets/public/documents/strategies/youth-strategy-action-plan.pdf. Accessed 191020

successful for local policy implementation. This could be a disadvantage of the RR Framework. However, this could be reconciled by combining both evaluation frameworks into one. This is in accordance with the analysis that showed significant areas of overlap or synergy between the two. This extends the benefits offered by the existing Assessing Community Resilience User Guide to provide a resource that better integrates the contribution that the institutions of government, at all levels, make to successful resilience policy. It recognizes government systems as a whole and the need for partnerships between systems of governance and other stakeholders including individuals, households, communities, businesses, and non-government organisations.

The broader focus may offset the disadvantages by enabling local government policy in other areas. For example, in the area of partnership development by looking beyond local capacity to harness the relationships, partnerships and collaborations that will empower the local government sector: advocacy, support for capacity building, behavior change, combined top-down and bottom-up styles of policy development and implementation. These elements of the RR framework are on the one hand aspirational and on the other, they counter what could result in a narrow or reductionist approach while still acknowledging the practical constraints that impact on local government and its capacity to independently formulate policy. From a strengths-based perspective a modified resilience policy assessment tool should provide local government with an enhanced capacity to participate in decisions that impact it but that are often made at state government level. This identifies and capitalises on local government's position of comparative advantage to influence policy. It aims to support local government to articulate and have acknowledged its ongoing and irreplaceable role in building community resilience. Community resilience will become increasingly important into the future in the context of climate change and the need for adaptation, investment in mitigation and risk reduction to natural hazards.

When the two indicator frameworks were applied to the council policies, there appeared to be areas that are a priority for councils, and the communities they serve, that are not well represented in either evaluation framework. For example, the triple-bottom-line approach to sustainability that spans the social, built and natural environments is strongly reflected in a number of both Knox and Maroondah Council's policies and plans. The significance of a 'sense of place' (page 33 Knox Liveable Streets Plan) or local attachment to place and its role in resilience was particularly prominent. For local government this policy priority should be reflected in a local government resilience evaluation instrument. This is a reminder that when we think of gaps in local government policy in terms of its alignment with resilience, some gaps occur in the scope and availability of evidence to inform local government policy. So, as well as there being a need to build resilience into the design of council policies from the outset, resilience in all its complexity needs to be clearly articulated within a preferred community resilience policy evaluation framework.

Another inclusion in the RR Framework within the Connected, Inclusive and Empowered domain is 'networks.' The idea of networks is synonymous with social capital, one of the four dynamic, adaptive capacities for resilience that were identified by Norris et al (2008). Networks of advisory groups and stakeholder and

community engagement forums are an important mechanism for ensuring community engagement and participation in the Maroondah and Knox policy development. Therefore, these activities were coded to the Connected, Inclusive and Empowered domain and its counterpart domain in the RR Framework. This boosted both councils' resilience credientials not only in the Networks sub-category but also in Governance because of how they facilitate community engagement.

The RR Framework also has components that align with many council policies in terms of attachment to place, sense of place, sense of community etc, Definitions in the ACRE Project Coding Book ensure these concepts were able to be included within the Sustainability domain in the RR Framework. However, there are not equivalent definitions for these terms in the EMV Framework. Another useful feature of the RR Framework is that it allows the idea of advocacy to be coded or added to the project references. Advocacy can occur at the individual level or it can involve lower levels of government lobbying higher levels for recognition, resources or other benefits. Ideas around advocacy are frequently discussed in both councils' policies. These have been coded to Governance or to Subsidiarity or to both depending on the specificity of the wording of the policy.

It is notable that the 'Governance' category and its sub-categories of accountability, community engagement and subsidiarity are referenced frequently. This interpretation included mentions of how state government and local government laws and policies interact and areas of agreement and areas of conflict. This was added to the 'subsidiarity' theme because it demonstrates how the different levels of government operate across the system. This can include issues, positive or negative that can arise in relation to the exercise of their roles and responsibilities including negotiation and coordination. Having said this, the power-sharing arrangements in the Australian Federation sometimes present limitations or barriers to the successful development and implementation of resilience policy by local government. 'Democratic and Engaged' is the domain in the EMV Framework's that is closest in meaning to Governance. However, this doman has a top-down emphasis. For example, it implies that the onus is on citizens to be engaged in the democratic process rather than covering the main characteristics of good governance more generally. This omission supports for the need to include 'governance' in a local framework for resilience. Many of the councils' policies focus on governance arrangements for the administration and management of the services it provides. Excluding it from the evaluation framework would overlook aspects of mainstream local government policy that contributes to resilience.

The outcomes of this project involve a reimagining of the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) to an evaluation framework that retains many of the elements of the EMV framework. This is important at the local government level because it must continue to direct its effort into areas that lie within its jurisdiction and influence. However, it could be said that EMV Framework is predominantly top-down and does not fully reflect areas where shared responsibility can be better enacted. On the other hand, the RR Framework allows for a combination of top-down and bottom-up approaches. It conveys local government and the people who live

in local government areas as active and influential participants who build upon resilience within their own area feed into the bigger picture at other levels of government. Further to the discussion on volunteering and the need to ensure the evaluation framework reflects council policy priorities and is not merely an instrument of top down governance,

Planning and the built environment themes are very strong but not necessarily expressed in terms of Sustainability (the RR Framework) and Sustainable Built and Natural environment (EMVwhich is Community capital

Information access is not explicit in the EMV framework but more so in the RR framework as part of Information and communication – the importance of learning for behaviour change (gaining knowledge and skills and putting them into action) and to support the sense of self-efficacy amongst community members that they are aware of local hazards and risks and what to do to mitigate the risks and adapt to residual risk.

Social and community *engagement* – is expressed in the EMV framework as Citizen engagement, which has a different connotation to community engagement int the RR Framework that is closely aligned with the ADRI I dea that social and community engagement allows the 'community to adaptively learn and transform in the face of complex change'.

Finally, *Governance and leadership* – aligns closely with the interpretation of governance in the RR framework but less so with the most closely corresponding characteristic of 'Democratic and Engaged' in the EMV Framework. IN the EMV framework the focus on top down wheras in the ADRI it is the 'capacity within organisations to adaptively learn, review and adjust policies and procedures or to transform organisational practices.' However, having said this for this project these qualities were included in the interpretation of the Reflective and Aware characteristic and learning environment - but again the EMV Framework's focus in top-down.

5.4 OTHER ISSUES

'Council has adopted a hierarchical approach to its planning to ensure that all policies and plans are informed by higher-order decisions and directions' (Knox Affordable Housing Plan, page 33). This describes a nested arrangement, which is characteristic of council policies and plans. For example, the Knox Central Structure Plan provides the local objectives and strategies articulated by the broader Knox Community and Council Plan. Nesting is a feature of subsidiarity. It is particularly evident in ecological sciences research and represents good governance consistent with resilience (Marshall, 2008). The presence in policies of wording around resilience and resilience principles can be seen as signaling an intention to translate resilience into practical outcomes. However, it is important to be aware that the use of resilience terminology in policy is not proof of a commitment to resilience nor does it prove that programs and activities designed to enhance resilience are being implemented. This goes to the need to monitor and evaluate policy and its implementation at all stages of the policy cycle. This is discussed further in Section 5.5 Next Steps.

The EMV Framework is more operationally focused than the RR Framework, which tends to be applicable at higher scales. This is not surprising given that the former is based on the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) which was developed with the view to it being used as a practical resource by local government, community organisations and businesses. There is benefit in having this type of resource in terms of ease-of-use and to encourage uptake. However, a highly operational approach has its disadvantages. The EMV Framework could be considered reductive in that it emphasises certain elements of resilience and omits others This may limit the scope of its use by local government and discourage innovation.

The RR Framework offers a more expansive view of local government's role. This will provide more balance in terms of top-down and bottom-up approaches. This is highlighted by the differences between the 'Democratic and Engaged' sub category in the EMV Framework and the roughly corresponding 'Governance' sub-category in the RR Framework. The former focuses on the responsibility for citizens to play their part in decision-making but does not mention the role of government. The latter emphasises the systemic nature of resilience. It acknowledges the role of citizens plus the ongoing responsibility for all levels of government to work together, to provide leadership, and to be accountable to its citizens for policy implementation and outcomes.

Clearly, the choice of one resilience framework over another is not clear cut and the disadvantages and advantages may very much depend on local conditions and preferences. Indeed, one disadvantage of the RR Framework is that it may require the development of locally applicable indicators in order to be implemented. Rather than arguing for the adoption of the RR Framework over the EMV Framework, a combined framework, that incorporates elements of both is proposed.

The following section discusses ideas for building on the outcomes of the ACRE project to achieve longer term resilience goals within the Maroondah and Knox local government communities.

5.5 NEXT STEPS

In addition to the findings detailed in Section 4, the ACRE project informs areas for future work aimed at better understanding and strengthening resilience. A proposed work program would consist of policy and program initiatives complemented by further research. In order to proceed Maroondah and Knox City Councils need to be advised of the outcomes of the ACRE project with a view to gaining broader council and community support for this work.

There are two pathways for taking this work forward that need to work in tandem. One involves local policy and program development and the other involves further research to build on the ACRE project. The sum of activities detailed in Sections 5.5.1 and 5.5.2 are seen as the ideal. However, it is acknowledged that it may not be possible to undertake all of these, and plans may need to be scaled down or time frames adjusted. Even so, gains in community resilience can still be made by enacting some of the less resource intensive suggestions in this report, sooner rather than later. The idea of proactively embedding resilience

throughout all council policies may be readily achievable, given all council policies are regularly reviewed and updated.

5.5.1 Policies and programs

First, Maroondah and Knox City Council, should be formally provided with the ACRE report and briefed on its findings.

In the first instance, discussions would be held within Maroondah and Knox City Councils, (and possibly to include the Melbourne Eastern Metropolitan Councils group). Councils would be asked to consider the findings of the ACRE report and their relevance to council policies and their communities. This assumes that there is actual or in-principle commitment to incorporate resilience into all policies including their municipal emergency management plans. Where there is not, this commitment would need to be sought.

The ACRE findings need not only to be considered in a local context but also in light of recent significant state and national disaster policy developments. For example, the findings from the Royal Commission into National Natural Disaster Arrangements concerning the role of local government, the development of an Action Plan to implement the National Disaster Risk Reduction Framework and the signing by all states and territories of the National Partnership for Disaster Reduction reform of the NPA.

Councils would be asked to support the development of a plan to adopt a resilience evaluation framework to fill the gaps identified by the ACRE project as well as to build on existing capacity. Volunteering and business continuity planning have been identified as specific gaps. As raised in Sections 5.2 and 5.3, attention to information and communication activities is needed to encourage people to adopt new and confident behaviours to take their share of responsibility for disaster resilience. Other opportunities could be explored to better use existing council advisory structures and networks to promote resilience.

The new framework would be based on the Community Resilience Framework for Emergency Management (Emergency Management Victoria, 2017) and would incorporate information from the community disaster resilience literature in accordance with the RR Framework. The revised framework would provide a valuable tool that councils could use to implement and evaluate their resilience policy.

Ideas for further research to support this plan could be canvassed with council. These are outlined below in Section 5.5.2 below. They would need to be accompanied by suggestions for funding from within existing arrangements or from other sources, including the Victorian and Federal governments. Importantly, efficiencies could be achieved by sharing the outcomes with other councils in Victoria and potentially with councils in other states and territories. Agreement could be sought to circulate the ACRE report to other internal and external stakeholders, including but not limited to Emergency Management Victoria and Local Government Victoria, and to invite discussions with other councils about the report. This may attract useful feedback and identify opportunities for collaboration, multi- sectoral partnerships etc.

5.5.2 Research

Once again, it needs to be emphasised that the scope of the ACRE project did not extend to evaluating policy outcomes or measuring the effectiveness of policies. It provided a set of evidence-based resilience characteristics and suggested that a single coherent framework should be adopted that combines these with the existing EMV Framework.

At the broadest level, all local government policies should be developed and reviewed to ensure they are informed by a comprehensive set of evidence-based resilience characteristics such as those identified in this project.

Once a local government resilience evaluation framework has been developed, an implementation plan with indicators should be developed to translate these characteristics into actions. Indicators that reflect triple bottom line reporting may be appropriate to take social factors into account (Wisemann, Victorian Community Indicator's Project).

Many of the Maroondah and Knox City Council Plans already have action plans in place and have used these to evaluate the effectiveness of their policies. It may be useful to conduct a stocktake of all existing action or implementation plans to build on work that may have already been done. From there, a central repository of existing indicators would be established. The repository would include information about their status. For example, how they were developed, whether they have been tested for reliability and validity, which data sources will be/have been used to measure the impacts, any issues or problems relating to data quality and availability. Some or many of the existing indicators may be suitable for the new resilience evaluation framework tool. These should be mapped to the evaluation framework and gaps identified where new indicators need to be developed.

The vision for this work is to support a resilience culture where inputs, in the form of policies, in and of themselves, can promote resilience. Similar to primary prevention, this approach focuses on upstream opportunities for change that prevent the conditions that create vulnerabilities.

A resilience culture goes hand in hand with an evaluation culture. It must become part of core business to monitor, measure and evaluate the outcomes of activities linked to resilience to test whether the policy and its implementation has been effective. As a minimum, this will require baseline measures of resilience so that pre and post levels can be measured and compared to identify successes or shortcomings. Ideally, measures would be builit in at various points throughout implementation so that changes can be regularly monitored and adjustments made along the way. This contrasts to an approach where indicators are measured as an endpoint when it may be too late to prevent adverse outcomes. Successful policy implementation will also be supported by reporting and accountability arrangements.

6 CONCLUSION

The ACRE project is an early, if not 1st step to providing an evidence-based pathway to assess the alignment of Maroondah and Knox City council policies with community resilience for disasters. Another outcome of this project is that it informs suggestions for future work.

The data set that was created to conduct the ACRE project is rich. More work could be done to analyse the text that was coded to the EMV Framework and the RR Framework. The data could be refined and more detailed interrogation and analysis undertaken. It may also be useful to look more closely at the barriers local government faces when trying to enable resilience. This is likely to be influenced by ongoing issues around the role of local government and the primarily, state legislated bounds within which it operates.

Most local government policies include plans for implementation and action. Knowing that successful implementation is critical for achieving the best policy outcomes, this, in and of itself is a positive feature of local government policy that 'closes the loop' between policy development and achieving desired policy outcomes within the community. To continue to effectively develop and implement resilience policy, councils may wish to consider the need to tailor the evaluation framework to their local priorities, taking account of the measures that have existing implementation plans and performance indicators.

A way forward could be to conduct an audit of council policies to identify existing indicators and to test their validity and reliability. This study could, at the same time identify suitable data sources, gaps in data availability and areas where access to data can be improved along with a strategy to overcome this problem. Baseline resilience measures are now available using the Australian Disaster Resilience Index (ADRI) (Bushfire and Natural Hazards Cooperative Research Centre, 2020). ADRI now makes it possible for local communities to conduct pre and post studies of resilience or longitudinal research. Having said that, local capability must also be developed to allow councils to identify how resilience may vary within local government areas, including across communities of interest and place.

This will help us to better understand resilience as a process with various inputs and how this links to the idea of resilience as a quality that rises to the challenge of an emergency, disaster or disturbance to eventuate in an improved state-of-being.

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APPENDICES

APPENDIX 1 – KNOX CITY COUNCIL AND MAROONDAH CITY COUNCIL POLICIES

- Knox City Council policies are available at: https://www.knox.vic.gov.au/plans or request a copy by emailing knoxcc@knox.vic.gov.au. The Knox Municipal Emergency Management Plan is available at:

  https://www.knox.vic.gov.au/Page/Page.aspx?Page_Id=3021

- Maroondah City Council policies are available at:

  https://www.maroondah.vic.gov.au/About-Council/Planning-for-our-future

  or by contacting Maroondah City Council at:

  https://www.maroondah.vic.gov.au/Customer-service/Contacts/Contact-us.

  Note that the Maroondah Municipal Emergency Management Plan is currently under review.

APPENDIX 2 – ACRE PROJECT CODING BOOK

Pages 60-68 (below)

APPENDIX 3 – PROJECT CLASSIFICATION SHEET

Available as a separate document from the Bushfire and Natural Hazard Cooperative Research Centre.

Visit https://www.bnhcrc.com.au/about/researchers to request a copy.

[ii] The term grey literature refers to research that is either unpublished or has been published in non-commercial form. Academics, pressure groups, and private companies are only some of the sources of grey literature. Much grey literature is of high quality. Grey literature is often the best source of up-to-date research on certain topics, Examples of grey literature include: government reports, policy statements and issues papers, conference proceedings, pre-prints and post-prints of articles, theses and dissertations, research reports, geological and geophysical surveys, maps, newsletters and bulletins, and fact sheets.

(University of New England, 2020)

Appendix 2 - Assessment of Community Resilience for Emergencies (ACRE) - Local Government Coding Book

Nodes\\Contextual nodes

Name	Description
Negative	Barriers, constraint or limitations on ability or capacity to enable a characteristic of resilience.

Nodes\\Project 1 - EMV Community Resilience

Name	Description
Connected, inclusive & empowered	Communities and systems consist of networks with linkages between and within their different groups or components. Network members identify with common or collective goals but may have diverse membership in terms of demographics and cultural background. People from a range of backgrounds, socio-economic groups and with different skills, educational levels and abilities have equitable access to networks to form connections from which they gain confidence, skills or other resources to achieve their goals.
Community connectedness	Networks, relationships and attachments are developed that are underpinned by trust. This produces social capital that can provide positive benefits for people, their families and communities. Communities are formed based on a sense of connection due to shared location, interests or cultural and social grouping. Connectedness can also occur from feelings of attachment and belonging to a physical place or the natural environment.
Service availability & accessibility	Services should be developed with adaptation and resilience in mind. Strong linkages through collaboration and partnerships between government (including emergency services), business, non-government and community stakeholders increase availability and access to infrastructure and services to meet community needs and supports resilience. Volunteers are an important element of service delivery as is effective transport connections and infrastructure and efficient internet communication services.
Culturally rich & vibrant	Communities consist of people from different cultural backgrounds and this diversity is celebrated by promoting their differences and supporting the co-existence and integration of a range of different customs

	and cultural contributions in both daily life and in special events.
Arts & cultural activities	Local arts and cultural activities are encouraged because they enhance individual and community quality of life and provide insight and understanding of others' views and experiences.
Culturally diverse	Cultural diversity in Victoria is increasing. This creates challenges and opportunities that can impact community resilience. Acknowledging citizens' varying cultural backgrounds and customs can identify and enhance strengths by creating new relationships and connections within communities.
Leisure & recreation	A work- life balance contributes to health and wellbeing and can increase productivity. People need to have access to sport, leisure and recreational activities that not only support their mental and physical wellbeing but also to create and strengthen community friendships, and connectedness. Quality local facilities for leisure and recreation can enhance appreciation of the natural environment and build new skills.
Democratic & engaged	Governance arrangements support democracy by being representative, accountable and transparent. Trust in decision-making. Citizens who are seeking to 'make a difference" are able to participate in the local political process. Some choose to be actively involved in the activities of their local community or to directly influence governance and decision-making in key institutions and organisations Enabling democracy and community engagement supports local leadership development.
Citizen engagement	People are interested in their local community and have an awareness of issues and leadership decisions and policies that can impact residents' social resilience, including resilience to an emergency. People may be engaged to the point where they take action or exercise leadership to influence these decision and policies. Political candidates represent community interests and enjoy a high level of trust as do emergency services.
Volunteerism	Resilient communities have a strong culture of volunteerism, including in the ermergency services or within other community or business organisations. People volunteer to contribute to their community in a spirit of altruism and to gain personal benefits in terms of wellbeing, including a sense of belonging. Volunteering increases workforce and service capacity and skills, particularly in regional and local areas where

	resources may be limited. Volunteering enacts shared responsibility.
Volunteer trends	Traditional volunteer models are becoming outdated. The current volunteer demographic reflects an ageing population. Younger people are time poor. Innovative volunteer opportunities may be more attractive to younger people. Organisations need to explore new ways of attracting volunteers and consider issues of how to appropriately value, train and retain volunteers.
Youth engagement	Young people are the next generation of volunteers and community leaders. Consider how to engage youth from culturally and linguistically diverse backgrounds (CALD), and across gender lines.
Dynamic & diverse local economy	Local economies are healthy when they are not dependent on a single sector or activity and when they are agile and can adapt to changing circumstances in the broader economy. Communities are resilient to economic shocks due to diversified employment opportunities and where there are jobs that can support a sustainable work- life balance.
Business Continuity Planning	Businesses are made resilient by having a plan that can assist them to continue to function in the event of a significant disruption or economic shock. This could include a natural disaster, interruption or damage to infrastructure. For example, business continuity planning can identify potential vulnerabilities and ensure that redundancy is built in. business supply chains, adaptability of core activities, having a back- up power supply, alternative communication, transport options.
Employment	A source of income that supports the livelihoods of individuals, households and communities. Secure or dependable employment that allows people to maintain a work-life balance and that generates income sufficient to achieve an adequate standard of living, and contributes to a sense of security and wellbeing. Non-paid and volunteer employment is also valued for the contribution it makes to the local economy.
Income & wealth	Incomes are sufficient to sustain a reasonable standard of living and support community economic activity. People are resilient when they have the enough money to be able to access goods and services that can give them autonomy that allows them to make lifestyle choices and exercise options in an emergency. A high cost of living and unaffordable housing can undermine this ability. Equitable resource distribution and reduction in the gap between rich and poor creates resilience.

Skills	Focus on building the skills of community members in all activities undertaken in households, schools and educational facilities, employment, volunteering. Tailoring experiences to learning and skills development that can be acknowledged, valued and transferable to other settings, including emergency management, will grow the economy and enhance employment opportunities.
Reflective & aware	Aim to empower communities and leaders, to develop awareness, shared responsibility and self-reliance, not only for emergency preparation, planning, response and recovery, but sustained as a principle to guide the work of all organisations day to day. People think for themselves and research or seek information and trusted advice upon which to formulate plans and make decisions.
Emergency management & mitigation plans	Promotes community-based emergency management whereby not only those who are directly involved in EM but also households, businesses, and organisations build overall capacity for emergencies through coordinated resilience-based approaches. Work together to identify risks & vulnerabilities and put in place plans to reduce these where possible, and to strengthen or harden their existing assets in preparation for an emergency and response plans that will assist them to survive or deal with an emergency.
Lifelong learning	People of all ages live and operate in an environment where they are willing and motivated to learn about how to become more resilient. They critically seek out information from trusted sources that is readily available, openly shared and communicated effectively. People can thus develop awareness and skills to help them to be flexible and to adapt in response to different or changing and sometimes difficult uncertain circumstances.
Responsibility & self-organisation	Shared responsibility recognises that communities and organisations have significant roles to play in building resilience before, during and after emergencies. This includes increasing capacity and capability for individuals, households and communities to be more self-reliant and to take greater responsibility for their own safety and resilience together with the appropriate support from emergency services, government, business, industry and non-government organisations.
Safe & well	The perception within a community of the absence of danger or threat to one's physical, social and emotional wellbeing or to the natural or built environment. This can

	translate into a sense of confidence and wellbeing that can be experienced at an individual level or collectively by groups or communities.
Personal & community safety	Community resilience is enabled when individuals feel safe from, or able to withstand and overcome physical and emotional harm. This means becoming aware of and working together to reduce or eliminate sources of potential harm or threat that undermine community resilience. This will include danger from natural and environmental hazards, but also those that arise in social, and built systems. For example, domestic violence, child abuse and neglect, suicide, crime, road traffic and workplace accidents etc.
Personal health and wellbeing	Objective and subjective sense of physical, social and emotional wellbeing, happiness, balance, positivity. People are able to be productive and to contribute to society. This outweighs experiences of illness, stress or sadness. Personal health and wellbeing, when experienced by a significant proportion of people in a given location or community of interest can translate into increased community resilience. Health and wellbeing is the underlying goal of community resilience, including for emergencies.
Sustainable built & natural environment	Sustainability is linked to policy through systems of governance that endeavour to meet the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs. High levels of amenity are accessible to all. Ecosystem services are valued and sustainable. There may be competing priorities between the goal of resilience in built systems and in natural systems that need to be balanced, or require trade-offs. Can supportclimate change mitigation & adaptation
Communications infrastructure	Internet services, information technology, connectivity. Issues of the 'digital divide' can impact communities' ability to participate or engage in business, volunteering, education, and other networks. Similarly coordination of emergency management, particularly during shocks requires reliable and effective access to social and technological communication networks.
Housing	Basic need for shelter. Affordability and availability of housing impacts resilience. Built quality of housing is a concern to protect health and wellbeing in terms of sanitation, heating and cooling in the context of more extreme weather event caused by climate change, adequate space and amenity for inhabitants, fire safety, exposure to areas of environmental hazards and the use

	of building and building materials that offer hardening or resistance to natural shocks including earthquakes, bushfires, floods.
Infrastructure	Infrastructure pressures and costs due to climate change, rising urban populations, dwindling rural populations, increasing diversity of communities and their needs, urbanisation and costs of maintaining and upgrading infrastructure. For example, poles and wires in electricity systems, flood levees, hospitals, schools, roads, aged, childcare and parking facilities, public entertainment venues.
Open green space	Access to open spaces and the natural environment supports physical and emotional wellbeing and resilience. Recreational and sporting use and for community connectedness. Balance green space accessible to residents with development. A high priority and valued by for citizens and promotes pride in the community and a sense of attachment to place that can translate into commitment to action to protect local parks and engage in measures to prevent damage or restore damage caused by natural or other hazards
Transport accessibility	Enhances connectivity, safe travel, tourism, community engagement, critical for accessing employment, educational opportunities and for supporting economic development, environmental impacts of congestion and stress on families and communities due to time spent travelling to and from work, school, and caring responsibilities. Must be reliable, accessible and support social inclusiion. For example, suitable for people with disabilities, older people and people with limited incomes.

Nodes\\Project 2 - Community Resilience Research

Name	Description
Connectivity	Social capital, bonds, networks, linking, systems, synergies, feedback loops, access to resources is facilitated by connections and membership of a group, trusted relationships, transport links, communications infrastructure, Internet, NBN
Networks	Formal and informal groups of individuals, organisations, businesses connected in various ways. For example through interdependencies, collaboration, partnerships, cooperatives, communication links, shared interests, shared sense of community, and attachment to place. Mechanisms that link groups or create networks can support the sharing of responsibility and tasks.

Social inclusion	Equitable access to services including transport, adequate and affordable housing, access to information, equitable resource allocation, social equity, vulnerability, disadvantage, diversity, learning, special needs, disability, minority, youth, migrant, culturally and linguistically diverse, non-English speaking
Volunteering	traditional volunteering, spontaneous volunteering, leadership, social capital, community participation, community commitment, skills development, workforce capacity, emergency management, community development, mental and emotional wellbeing, shared responsibility, self-reliance
Culture, the Arts & Recreation	Community wellbeing, creativity, sense of community, innovation, work-life balance, inclusive, participation, art, music, sport, entertainment, self-expression, exercise.
Economic Development	Productivity, growth, sustainable economic development, innovation, resources, creativity, dynamic local economy, small business, investment, business continuity planning, redundancy, assets, asset management, multiple sectors offer diverse employment opportunities
Economic diversity	
Employment	employment opportunities, security of livelihood, income, education and training, skills development, school attendance, cost of living, stable jobs, youth employment, diverse employment sectors
Innovation	New, creative or novel approaches that are associated with increased economic development and productivity, often through diversification. Innovation can support adaptation and in business and other economic activity can include partnerships, collaborative ways of working.
Governance	Institutional arrangements for decision-making and administration of public functions, Council, local Government, municipal, state government, multi-level, regional, democratic, participatory, representative, subsidiarity, funding, resources, trust, coordination, negotiation, defined roles and responsibilities, leadership, shared responsibility, capacity building. Capacity will be increased by joined-up governance and institutional arrangements.
Accountability	Reporting, triple bottom line, financial accountability, social accountability, community accountability, transparency, enabling public access to reporting or evaluative information, decision-making processes, assessment, evaluation, review, reform,

Community engagement	democratic governance, citizen participation, community consultation, community collaboration, partnerships, top- down and bottom-up
Subsidiarity	Power is shared, devolved or decentralised to the lowest level of government where there is shared community interest. Functions and tasks are managed at the lowest level of governance with the capacity to conduct them satisfactorily. 'Nested' policies & plans. Greater local input into decision-making allows policies and services to be customised to suit local preferences. Relies on stakeholder engagement, coordination, open access to information, capacity building and negotiated roles and responsibilities.
Health and wellbeing	Individual and community wellness, protective factors, prosperity, productivity, vulnerability, health care, services, hospitals, health promotion, prevention, prevent and manage chronic illness, physical fitness, exercise, mental health, social wellbeing, social equity
Emergencies & Disaster management	Shock/disturbance that requires a coordinated and often rapid response to minimise damage, injury, loss of life; public health, uncertainty, emergency services, volunteers, hazard reduction, risk reduction, mitigation, vulnerability, strengths, build community resilience, natural disaster, climate change, extreme weather events, adaptation, community engagement, preparedness, relief and recovery, local laws and regulations, land use planning, building codes, insurance, planning, trust, command and control.
Safety	threats, risk, risk reduction, emergency preparedness and planning, local risk awareness, road safety, policing, child safety, domestic violence, hazards, fires, floods, crime prevention, personal safety, risk mitigation, volunteer, extreme weather events, security, equitable allocation of risk.
Learning environment	Trusted sources of information, formal and informal education, local media, access to information, science/evidence-based planning and decision-making, democratic processes, citizen participation, stakeholder engagement, past experience, reflexive, awareness of local risks, evaluation and review.
Information and communication	Behaviour change, trusted sources of information, media, accurate and reliable information, research links to practice, shared information, free flow of information, vertical and horizontal information sharing, flexibility, stakeholder engagement, community consultation, evidence-based, education, infrastructure,

	Internet, digital literacy, resilience narratives, focus on strengths
Self-efficacy	Community competence, confidence in ability, knowledge and experience supports sense of empowerment, share responsibility, empowered citizens, skills development, volunteering, adaptive capacity, adaptation, action, self-reliant, agency, leadership, political partnerships, political participation.
Sustainability	Triple bottom line. Sustainable economic development. 'Meeting the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs', Sustainability is a principle for economic development that is integrated with resilience. Sustainability principles also guide climate change response activities that may operate in built and natural environments. These include mitigation measures designed to reduce greenhouse gas emissions and adaptation measures.
Built environment	Sustainability in the built environment allows the needs of people to be met today without undermining the ability to meet their needs in the future.Factors include amenity, safety, accessibility, adequate critical infrastructure. For natural disasters it is the ability to tolerate and overcome damage, diminished productivity, and reduced quality of life without significant outside assistance (Mileti, 1999 p.4), or to maintain and resume function in a timely way eg through BCP or other adaptation measures.
Natural environment	Natural resource management, development, population growth, hazard reduction, Social, economic and environmental sustainability can be enhanced by disaster risk management and adaptation, address the causes of vulnerability, place-based attachment