Community Emergency Risk Assessment

Informing Emergency Management Planning

Victoria State Emergency Service (VICSES)

Findings Report

2016 - 17

Published by the Victoria State Emergency Service
Melbourne, June 2017

Authorised by the Victoria State Emergency Service
168 Sturt Street, Southbank

An electronic version of the plan can be obtained at:
https://www.ses.vic.gov.au/em-sector/community-emergency-risk-assessment-cera

Contents

Foreword

"For Australia to become more resilient to disasters, a clearer understanding of our risks and what to do about them is needed, particularly at the community level."[1]

Victoria State Emergency Service (VICSES) is committed to working collaboratively with our key partners towards a sector-wide compatible approach for emergency risk assessment in Victoria, creating a shared sense of purpose to improve the consistency and rigour of emergency risk assessments, and to allow meaningful comparisons across the sector on different hazards and/or hazard footprints.

VICSES supports this approach through the facilitation of the Community Emergency Risk Assessment (CERA) program. CERA was designed by VICSES as a risk assessment process to deliver on its legislated emergency management responsibilities and to provide Municipal Emergency Management Planning Committees (MEMPCs) with a framework for considering and improving the safety and resilience of their community before, during and after emergency events. A range of hazard data and risk assessments are available across Victoria for emergency management purposes. These range from local, single-hazard risk assessments to state-wide risk reviews.

Importantly, CERA provides a platform for communities, organisations and government to understand and measure a wide range of hazards that pose significant threats to the normal functioning of their 'community of interest'. The program highlights opportunities for improvement and collaboration for emergency management arrangements as described within each Municipal Emergency Management Plan (MEMP).

This report presents an overview of the program and the findings as at June 2017 from 75 MEMPCs that have completed CERA since the introduction of **CERA version 2.0** in late 2013.

Further information on CERA is available at
www.ses.vic.gov.au/em-sector/community-emergency-risk-assessment-cera

Kate White
Director Community Resilience and Communications

[1] Council of Australian Governments (COAG), 2011, National Strategy for Disaster Resilience: Building our nation's resilience to disasters, Australian Government.

1. Introduction

1. Introduction

1.1 Background

Under Victorian legislation and ministerial guidelines, each of the 79 municipalities and six Alpine Resort Management Boards in Victoria are required to complete an *ISO 31000 Risk management – Principles and guidelines* compliant risk assessment process. In response, VICSES designed the ISO 31000 compliant Community Emergency Risk Assessment (CERA) process, and now supports the Victorian emergency management sector through facilitation of the CERA process.

The program was built on a pre-existing model introduced by VICSES in 1999, known as the Community Emergency Risk Management (CERM) process. In 2011, VICSES developed CERA to provide Municipal Emergency Management Planning Committees (MEMPCs) with a multi-hazard framework for considering and improving the safety and resilience of their community before, during and after emergency events.

As part of a continuous improvement approach for external-facing VICSES products, the CERA program was reviewed and updated in late 2013 to better reflect key partner and stakeholder needs.

This resulted in a number of changes being made to the way in which the CERA process was structured. In particular, the way in which the program is facilitated was modified to support a consistent platform that enables practitioners to identify and prioritise community (disaster) risks across all hazards. This identification and assessment of risks then informs the emergency planning process – before, during and after emergency events.

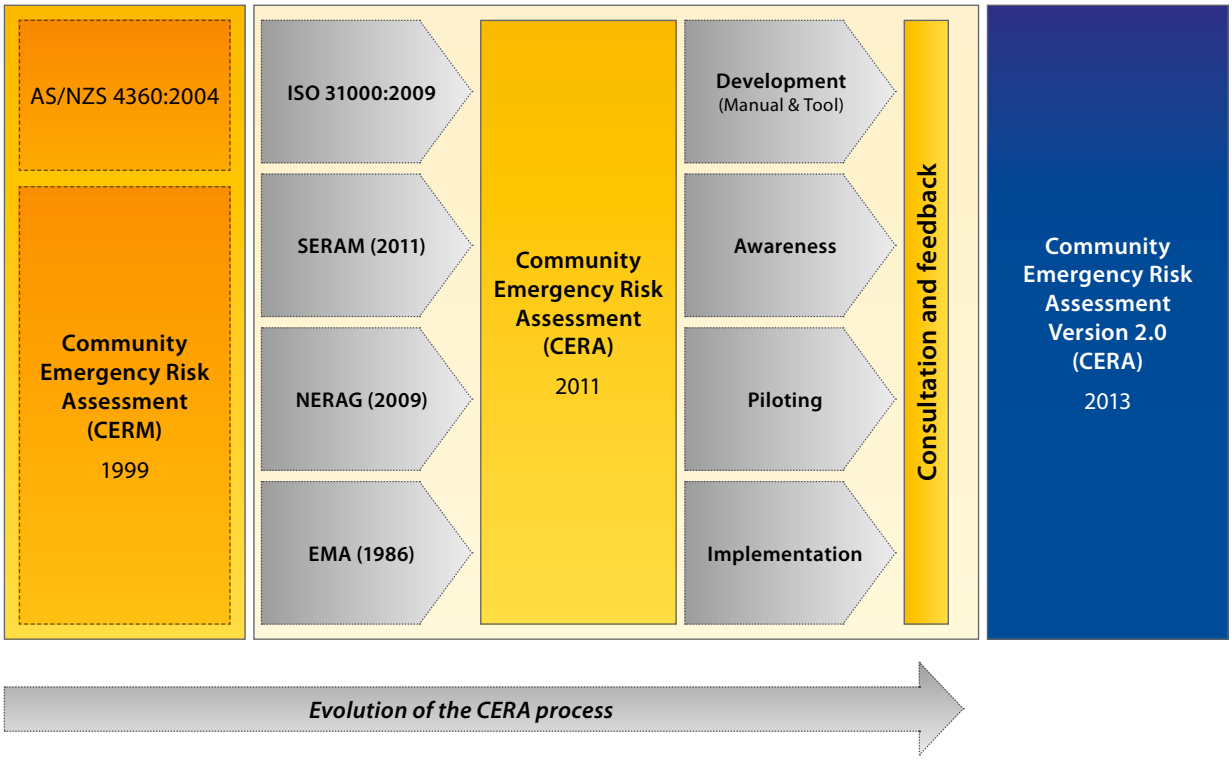


Figure 1: *Evolution of CERA*

1.2 CERA approach

Community Emergency Risk Management (CERM) is a process that aims to reduce risks within a community. This can be done by identifying the risks that a community faces, assessing the vulnerability of the community to those risks and providing options to treat – that is, to reduce or eliminate – the risks.

As such, CERA provides MEMPCs with a framework for considering and improving the safety and resilience of their community with regard to hazards and emergencies, when making evidenced-based judgements about local risk priorities.

The CERA approach aims to understand the likely impacts of a range of emergency scenarios (hazards) upon community assets, values and functions, providing an opportunity for multiple community impacts and consequences to be considered and enabling collaborative risk treatment plans and emergency preparedness measures to be described.

The outputs of the assessment process are then used to inform emergency management planning, introduce risk action plans and ensure that communities are aware of, and better informed about, hazards and the associated emergency risks that may affect them.

The benefits of this approach include:

- promoting a risk-based approach to community safety and emergency management
- providing a common platform for assessment of emergency risks at the municipal level
- providing an opportunity to develop a dataset to inform decision-making at the local, regional and state levels
- providing the ability to report on emergency risk – from the top down or bottom up
- providing an advocacy tool for community to government
- driving responsive disaster reduction action by MEMPCs
- providing a robust platform on which to base engagement with the community with regard to their risks across all hazards.

1.3 Uptake of CERA in Victoria

A total of 85 Victorian local government entities are required to undertake an ISO 31000 compliant risk assessment process. These are comprised of 79 municipalities and six Alpine Resort Management Boards (ARMBs)[2]. 81 of these entities have participated in a CERA assessment.

The data generated from these CERA assessments is provided in **Part 5** of this report *(CERA Results)*, organised by VICSES region.

In addition to its application at a municipal level, CERA is also being undertaken within the private sector. Key infrastructure, such as Melbourne (Tullamarine), Essendon and Moorabbin Airports, have all completed CERA assessments, and the Hospitals Network Group, consisting of six major Melbourne Hospitals, has also asked VICSES to consider the adaptability of CERA for their purposes.

[2] The six Alpine Resorts (Falls Creek Alpine Resort, Lake Mountain Alpine Resort, Mount Baw Baw Alpine Resort, Mount Buller Alpine Resort, Mount Hotham Alpine Resort and Mount Stirling Alpine Resort) are administered by their respective ARMB. Under the *Alpine Resorts (Management) Act 1997*, the territories managed by the Boards are considered to be municipal districts for the purposes of the *Emergency Management Act 1986*, with the exception of Lake Mountain, which has delegated authority for emergency planning to Murrindindi Shire Council. Some of these ARMBs have conducted a combined CERA process, due to physical proximity and common risk profile.

1.4 Legislative Requirements

Both CERM and CERA were developed to address the legislated and mandated emergency management-related responsibilities of VICSES, as set out in Victorian legislation and emergency management arrangements. These responsibilities are outlined as follows:

- *Victoria State Emergency Service Act 2005*, Section 5(1)(a)(i), whereby the functions of the Authority are emergency management planning including assisting municipal councils in relation to the performance and exercise of their duties and responsibilities under the *Emergency Management Act 1986*.
- The *Emergency Management Manual Victoria (EMMV)*, which sets out the Victorian emergency management arrangements, states municipal planning committees should use a "risk management process consistent with the Australian/New Zealand Standard *ISO 31000:2009 Risk management – Principles and guidelines*, such as the Community Emergency Risk Assessment (CERA) process". VICSES is also identified as the agency that can provide information and assistance on undertaking the risk assessment process.[3]

Victoria's municipal planning process can be seen as a series of steps as shown in **Figure 2** below.

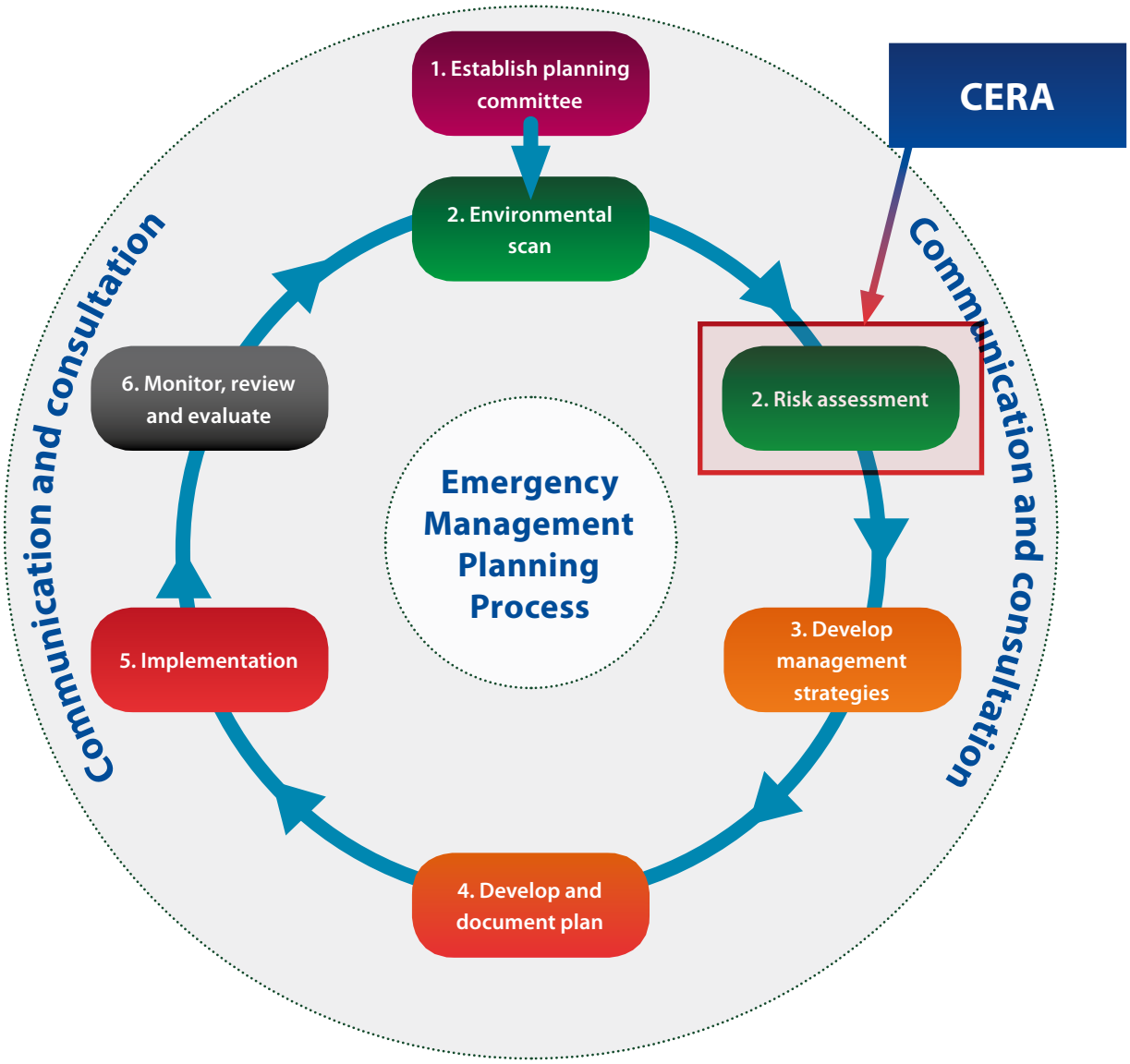


Figure 2: *Victoria's Emergency Management Planning Process*[4]

[3] State of Victoria (Emergency Management Victoria) (2015), *Emergency Management Manual Victoria, Part 6 Section 5 Risk Management*, Page 6-13 http://fire-com-live-wp.s3.amazonaws.com/wp-content/uploads/Part-6-EMMV-.pdf

[4] State of Victoria (Emergency Management Victoria) (2015), *Emergency Management Manual Victoria, Section 5 Risk Management*, Page 6-3 http://fire-com-live-wp.s3.amazonaws.com/wp-content/uploads/Part-6-EMMV-.pdf

1.5 Compliance to risk standards

CERA complies with the National Risk Assessment Guidelines (NERAG), which are a national version of the international risk management guidelines for assessing risk of natural disasters. NERAG was first introduced in 2010 and then released in 2015.

Both CERA and NERAG are consistent with the international and Australian/New Zealand Standard *AS/NZS ISO 31000:2009 Risk management – Principles and guidelines*[5] that provides the principles and generic guidelines on risk management.

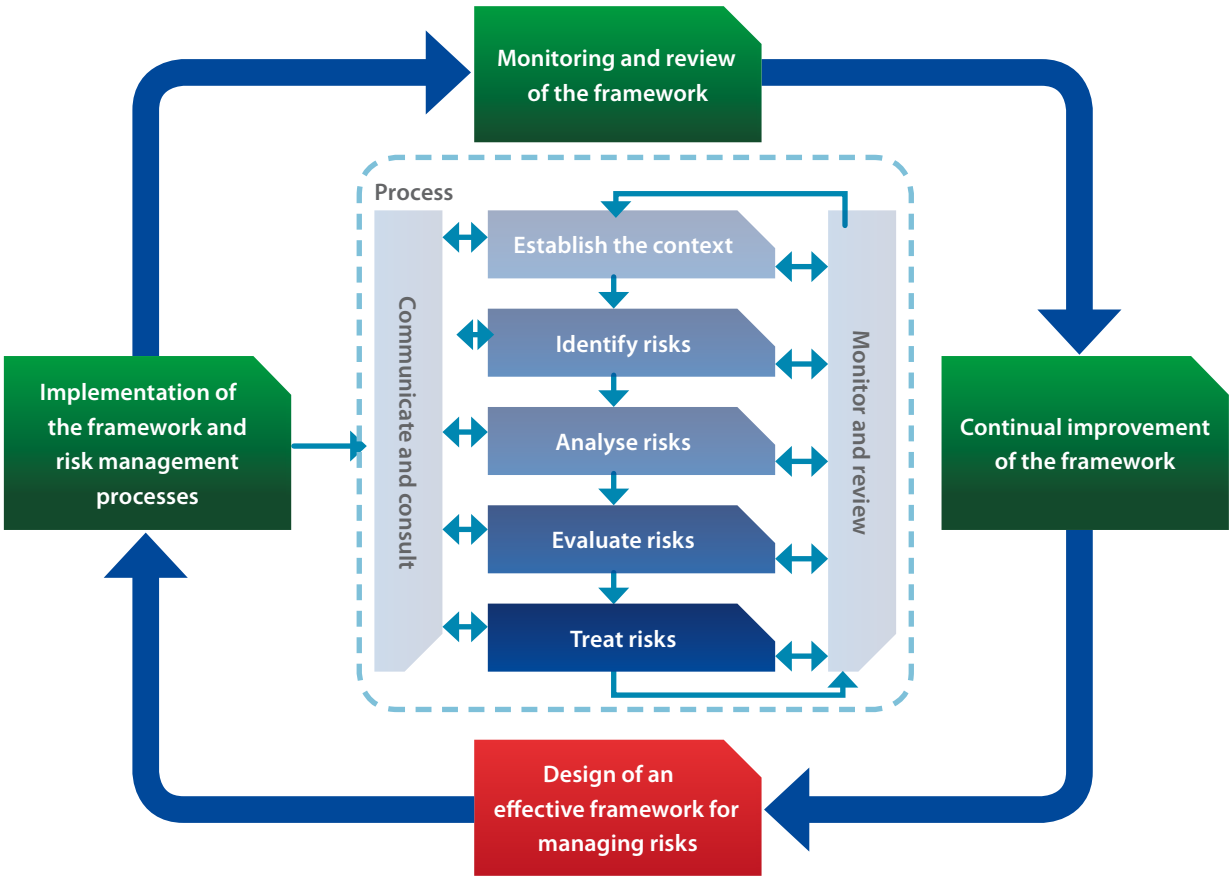


Figure 3: *ISO 31000 Risk Management Process*

[5] International Organization for Standardization, ISO 31000:2009 https://www.iso.org/standard/43170.html

2. CERA process

2.1 Facilitated CERA sessions

2.1.1 How does it work?

CERA is designed to be undertaken over two sessions that are facilitated by VICSES. Integral to the success of the process are the in-depth discussions that occur between experts, decision-makers, practitioners and community representatives. The CERA meeting format is designed to promote a collaborative discussion on the ways in which various hazards may affect things that are important to the community.

CERA encourages MEMPCs to:

- consider identified priorities across their assets, values and functions
- understand local strengths and weaknesses to gain a better understanding of the impacts that various hazards will have upon them
- distribute resources and detail arrangements in a way that will offer the most efficient and effective ways to maintain normal functioning.

It is important that we explore our understanding of the hazards that our communities may be subject to, how these hazards can in turn become emergencies, and the various ways in which to plan for, to prevent and to reduce their impacts. By developing an understanding of the likely impacts and factors that underlie local exposure and vulnerability, participants are better placed to describe how they will treat these risks or cope with residual impacts within their Emergency Management Plan (EMP).

The timing is dependent upon the complexity of each municipality and their communities, the capacity of the MEMPC, availability of subject matter experts and community representatives, as well as access to local knowledge, information and intelligence.

2.1 Facilitated CERA sessions *continued*

2.1.2 Session One: Understanding 'risk' for hazards and emergencies

In **session one**, a workshop is convened with all MEMPC members. The session is facilitated so that members can identify the hazards that pose the most significant threat to their community, as well as identifying the assets, values and functions that are integral to the normal functioning of their community. This is an interactive workshop facilitated with the group with the use of visual aids where possible (e.g. a large map showing the municipality and immediate surrounds, etc.).

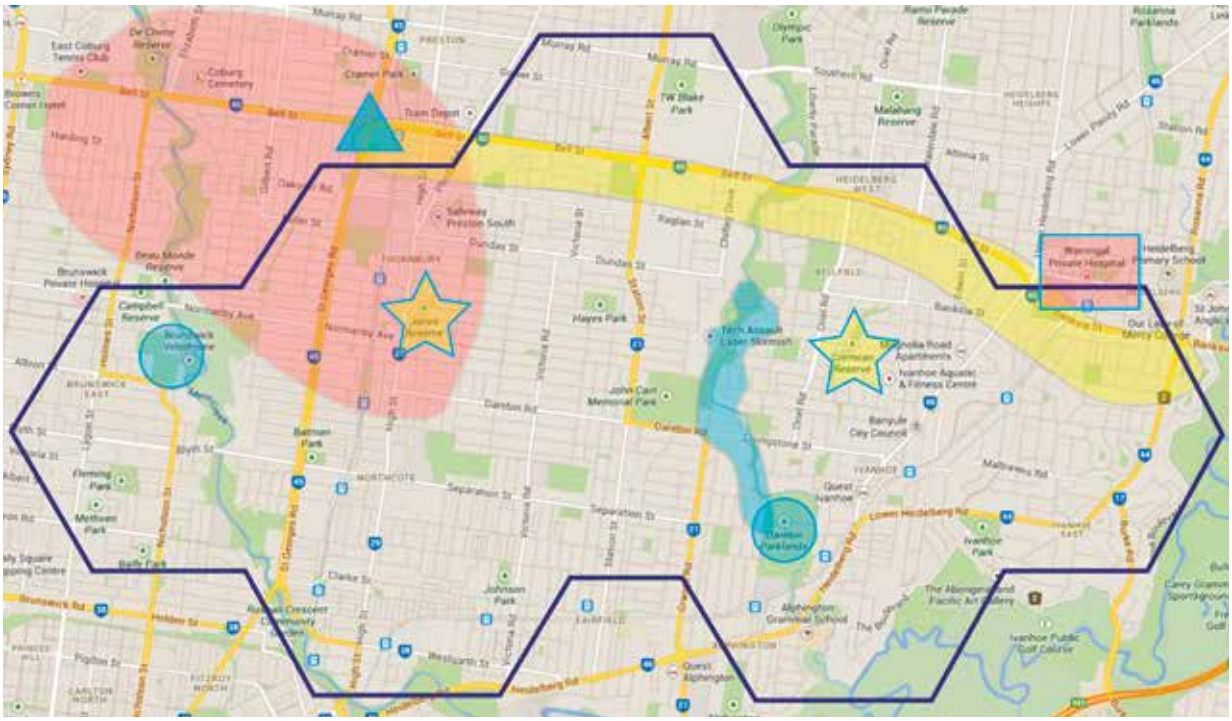


Figure 4: *Mapping the elements that define 'risk' within a specific area*

Examples of key discussion points at this session may include:

1. What is important to the community (e.g. local buildings and businesses, environmental landmarks, etc.)?
2. What hazards do we think the community of interest is exposed to (e.g. flood, fire, landslide, heatwave, animal or plant disease, etc.)?
3. What community assets need to be protected or are at risk, based on exposure and vulnerability? For example, assets (e.g. roads, bridges, buildings, etc.), values (e.g. traditions, social identity, etc.) and functions (e.g. trade, health system, transport, etc.), which are integral to the normal functioning of their community.
4. What access does the MEMPC have to local knowledge, information and intelligence on these matters?
   - Existing 'single hazard' risk assessments (e.g. Victorian Fire Risk Register (VFRR), Integrated Fire Management Planning (IFMP) and flood studies, etc.)?
   - New or existing community profile information (e.g. Part 2 of Municipal Emergency Management Plans)?
   - Local knowledge (e.g. community groups, local units and brigades, faith groups, etc.)?
5. Who do we talk to about what we have discussed and identified at this session (i.e. who are the experts who can provide further information, data or a better understanding on these issues)?

2.1 Facilitated CERA sessions *continued*

2.1.3 Session Two: Identifying and understanding 'risk' for hazards and emergencies in your community

In **session two**, a larger committee consisting of the MEMPC members, invited hazard experts and community representatives gathers for a second workshop to understand and describe:

- the nature and behaviour of hazards identified in session one
- the exposure and vulnerability of identified key community assets, values and functions to each specific hazard.

During the group discussions, each member of the group is asked to anonymously rate the likelihood and consequence of each hazard, and their confidence in this rating. Definitions of the risk assessment criteria can be found in **Appendix 2**.

Ratings confidence is a value that is determined as part of the voting process and represents the experience that the participants have with the hazard, or the involvement of relevant experts.

For each identified hazard, a Subject Matter Expert (SME) (e.g. VICSES for flood and storm, the Country Fire Authority (CFA) for bushfire, or Victoria Police (VicPol) for civil disturbance) is invited to describe the hazard at the workshop and to detail the current risk and the current measures in place, or proposed measures to be introduced, to mitigate the hazard.

Where specialised, hazard-specific risk assessment information is available (e.g. structure fire risk from the Victorian Built Environment Risk Assessment Process, or bushfire risk from the Victorian Fire Risk Register – Bushfire), this information can be provided to the committee by the SME to better inform the broader scope of the multi-hazard CERA process.

The availability and attendance of SMEs often influences the understanding and confidence of the CERA assessment. For example, the presence of representatives of organisations representing specific risks to a municipality, such as BOC (a gas supplier) at the Darebin CERA or a Melbourne Airport representative at the Brimbank CERA, results in greater confidence of participants when rating the hazards, risks and controls.

This greater understanding and confidence typically results in a lower residual risk rating. The residual risk rating is the level of risk that remains after taking into account existing mitigations and controls, and is calculated by the residual consequence and residual likelihood/frequency ratings as depicted in **Table 1**.

Once risks have been identified and rated, participants identify strengths and weaknesses in existing planning and mitigation arrangements, as well as identifying the opportunities for improvement to prevention, control and mitigation measures.

	Consequence rating				
Likelihood/ frequency	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Almost certain 5	Medium	Medium	High	Extreme	Extreme
Possible/likely 4	Low	Medium	High	High	Extreme
Unlikely 3	Low	Medium	Medium	High	High
Rare 2	Low	Low	Medium	Medium	Medium
Very rare 1	Low	Low	Low	Medium	Medium

Table 1: *Risk rating table used in CERA, adapted from NERAG.*

2.1 Facilitated CERA sessions *continued*

To finalise the CERA process, this data is loaded into an excel-based risk assessment tool that will calculate the levels of risk and create exportable risk sheets and heat maps for inclusion in MEMPs and for discussion and review at future MEMPC meetings.

Examples of key discussion points at this session may include:

1. 'Who' or 'what' is most likely to be affected by the hazard (e.g. what are the assets, values and functions identified from session one)?
2. What can be done to eliminate or reduce the causes or contributing factors for the hazard?
3. Are there existing controls in place to mitigate the impacts? If so, what are they?
4. What evidence do you have to support the effectiveness of these controls? What is the confidence rating of these controls?
5. How can we use our local knowledge and access to SMEs to improve existing controls?
6. What other plans and/or arrangements do we need to develop and/or advocate for (e.g. what is in the MEMP, is there an existing memorandum of understanding, localised mitigation works and programs)?

2.2 CERA products

2.2.1 Heat map and residual risk rating table

Results of CERA are represented on a heat map graphic (refer to **Figure 5**), which is a graphical representation of residual risk, the effectiveness of controls and likelihood. The heat map helps to inform the level and type of action to be taken relative to each risk. These can be grouped into two categories:

1. Improve controls – generally for risks with high residual consequence and low control effectiveness (i.e. current controls are considered ineffective). This indicates action should be taken to review and improve controls.
2. Monitor controls – where a risk has a high residual consequence and high control effectiveness (i.e. current controls are having good effect on risk). Controls should be monitored to validate ongoing effectiveness.

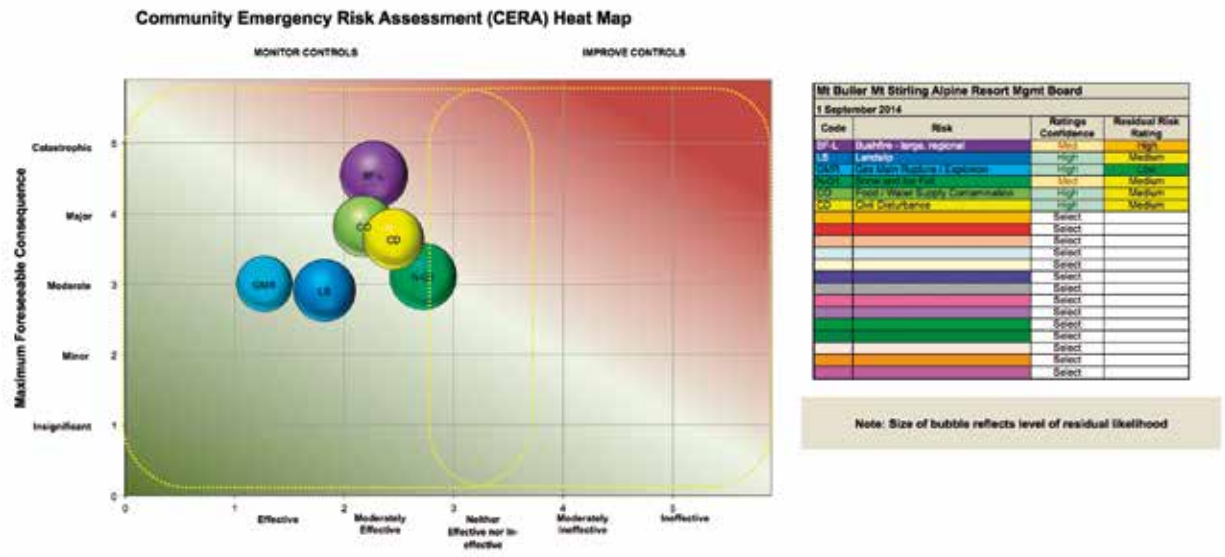


Figure 5: Left: Heat map example with risks plotted. Right: Table with rated risks as represented in the heat map.

The table presented next to the heat map helps to further inform the process. It includes the code (identifier of each risk), risk title, ratings confidence and residual risk rating. Typically, the heat map and table are included in the respective council's MEMP as a source of reference of the risks to the community.

High or extreme residual risk categories may prompt the municipality to engage with government, agencies, experts and community representatives to determine additional measures that can or should be taken to mitigate the risk as part of the 'treat risks' phase.

2.2 CERA products *continued*

2.2.2 Dashboard view

The CERA tool also combines all the hazards in a dashboard view; **Figure 6** is a small extract of that view showing the identified hazards, rating scores and the residual risk rating.

Ref	Code	Hazard title	Risk ratings						Collaboration	
			Ratings confidence	Maximum foreseeable consequence	Current mitigation / control activities	Residual consequence (see calculator above)	Likelihood / frequency	Residual Risk Rating (RRR) (auto generated)	Other municipalities	State agencies
Risk 1	BF-L	Bushfire - large, regional	Medium	4.55	2.27	3.36	3.55	High	Maintain	Maintain
Risk 2	LS	Landslip	High	2.91	1.82	2.09	3.00	Medium	Maintain	Maintain
Risk 3	GMR	Gas main rupture / explosion	High	3.00	1.27	1.91	2.36	Low	Maintain	Maintain
Risk 4	N-O1	Snow and ice fall	Medium	3.11	2.72	2.28	3.47	Medium	Establish	Establish
Risk 5	CO	Food / water supply contamination	High	3.82	2.18	2.55	2.91	Medium	Maintain	Maintain
Risk 6	CD	Civil disturbance	High	3.64	2.45	2.45	2.82	Medium	Maintain	Maintain

Figure 6: *One section of the dashboard view in the CERA tool, showing the ratings columns.*

2.3 Next steps after completing CERA

To maintain the currency of the risk assessment and CERA outcomes, it is suggested that the following actions are taken:

- document outputs within treatment plans and collate them into single register
- update MEMPs, both to incorporate risk assessment outcomes, and to comply with audit
- review CERA outcomes as a standing agenda item at each MEMPC meeting
- develop community engagement plans to implement shared actions.

3. Complementary Victorian risk programs

3. Complementary Victorian risk programs

A range of hazard data and risk assessments is used by emergency services in Victoria. CERA is a multi-hazard assessment, typically undertaken at the municipal level; others can be hazard-specific and undertaken at different scales, different levels of detail and with a range of types of deliverables.

This section outlines the key risk assessments in use, the hazard elements that they assess, the outputs delivered, and how well the data aligns with CERA data. Data and outputs from hazard-specific risk assessments and intelligence platforms, especially those outlined in this section, can be used to inform CERA when this knowledge is presented by SMEs.

3.1 State Emergency Risk Assessment Report

Since 2006, a number of state-level emergency risk assessment projects have been undertaken in Victoria to determine the state's priority emergency risks. The results of the state-level emergency risk assessments have been used to guide strategic decision-making for the management of the state's priority emergency risks. The methodology used for the state-level emergency risk assessment projects was developed by the State Emergency Mitigation Committee (SEMC), and later revised to align with the *National Emergency Risk Assessment Guidelines (NERAG)*, first published in 2010.

The results of Victoria's state-level emergency risk assessments undertaken in 2012-13 were publicly released in February 2014, published in *Emergency Risks in Victoria – Report of the 2012-13 State Emergency Risk Assessment*. A key driver for the release of this publication was to fulfil an output of the National Partnership Agreement (NPA) on *Natural Disaster Resilience: communicating risk to the public*, through the publication of state-wide risk assessments. The NPA is an agreement between the Commonwealth Government and the states/territories, which provides funding to meet a range of objectives relating to natural disaster resilience.

The NPA on Natural Disaster Resilience (2016-17) requires the states/territories to publish a new, revised or updated state-wide risk assessment, as agreed by the Standing Council on Police and Emergency Management (now the Law, Crime and Community Safety Council).

Emergency Management Victoria (EMV) is leading the State Emergency Risk Assessment Review (SERAR) 2016-17 to fulfil this NPA requirement. The SERAR project delivery phase includes the following key stages:

- engaging key stakeholders and risk management contractor
- reassessing / assessing emergency risks (using national guidelines)
- final reporting and publishing a revised version of *Emergency Risks in Victoria – Report* of the 2012-13 State Emergency Risk Assessment.

The State Crisis and Resilience Council (SCRC) Risk and Resilience Subcommittee is overseeing the SERAR project and a steering committee has been appointed from its membership.

3.2 Victorian Fire Risk Register - Bushfire (VFRR-B)

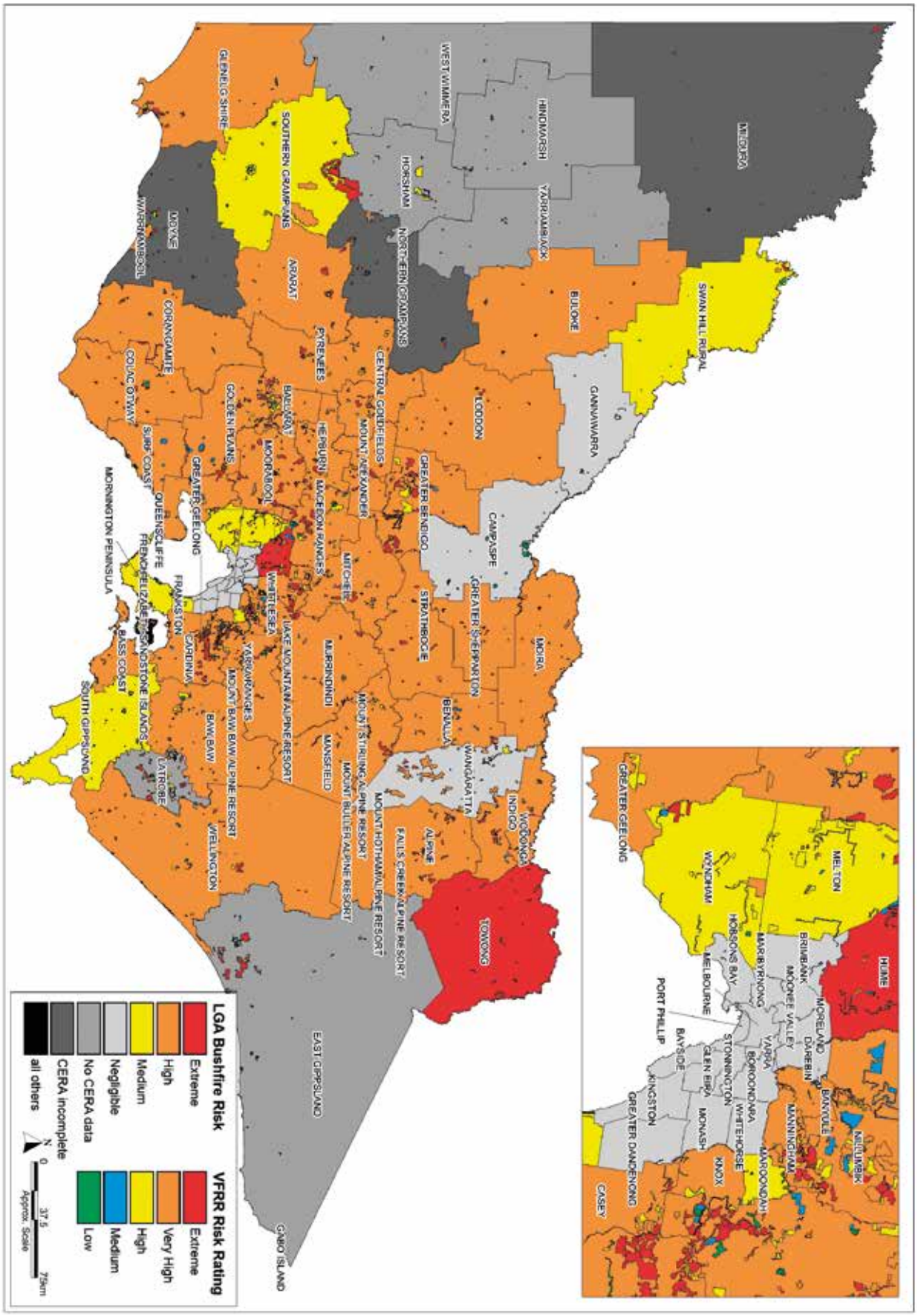
The Victorian Fire Risk Register - Bushfire (VFRR-B) is a systematic process that identifies assets at risk from bushfire, assesses the level of risk to those assets and records the risk mitigation treatments currently in place along with their responsible agencies. The VFRR-B process encourages and facilitates multi-agency participation, dialogue and support at local, regional and state levels and serves as a powerful foundation to inform fire management planning processes. The high-impact visual outputs of VFRR-B have contributed to an enhanced understanding of assets at risk, which has been identified as a key strength of the process. Both the process and outputs inform decision-making related to bushfire planning and preparedness across a broad array of departments, agencies, communities and businesses. This includes, but is not limited to:

- Informing the bushfire component of the Municipal Fire Management Plan (MFMP)
- Prioritising the delivery of CFA's prevention and preparedness services
- Supporting the Department of Education and Training (DET) to review their Bushfire At Risk Register (BARR) to determine facilities and services at risk that should be closed on Code Red days.

The VFRR-B has been successfully implemented and continues to be reviewed in 66 of 79 local government areas of Victoria, as well as six Alpine Resorts and French Island. CFA continues to coordinate, facilitate and manage the VFRR-B through a centralised support team, which also includes providing support to review risk data annually as recommended.

Figure 7 overlays VFRR-B data over the CERA *Bushfire – large* outputs. Note that this is a visual comparison only, as the different spatial scales of CERA and the VFRR-B make a quantitative comparison unreliable and impractical.

Figure 7: *CERA 'Bushfire – large' data, with VFRR-B data overlay*



3.3 Victorian Built Environment Risk Assessment Process (V-BERAP)

V-BERAP is a risk assessment developed by the Melbourne Fire Brigade (MFB) in partnership with the CFA and conducted at a municipal scale, which assists councils in understanding and managing their structure fire and hazardous materials (hazmat) risks.

V-BERAP is an adaptation of NERAG, contextualised for Victoria. The comprehensive risk management process is underpinned by *ISO 31000* and follows a robust step-by-step process. V-BERAP development included extensive consultation and collaboration from a range of relevant stakeholders across the sector including MFB, CFA, Department of Environment, Water Land and Planning (DELWP), VicRoads, VICSES and EMV. It provides a consistent and rigorous approach for assessing and treating risks in the contexts of structure fires and hazardous materials in the built environment. Combining knowledge and experience from a range of stakeholders and backed by current and historic data, the V-BERAP workshops provide a collaborative approach to risk and aid in future emergency management planning.

The information gathered from the risk assessment process can be used to support and inform emergency and fire management planning, develop tailored risk treatments and improve collaboration. V-BERAP recognises CERA as an overarching process and VFRR-B as a complementary process.

V-BERAP was endorsed by the State Fire Management Planning Committee in May 2015 and has been validated via pilot workshops across six municipalities. The workshop process will be rolled out across the remaining LGAs over the next two years by MFB and CFA.

The output of a V-BERAP assessment provides the end users with a structured treatment management system with clear stakeholder accountabilities. These users include the MEMPCs and Municipal Emergency Response Officers (MEROs), as well as sector partners seeking to assess structure fire or hazmat risks.

3.4 FloodZoom and flood studies

Though not a risk assessment, a significant amount of flood intelligence is available in Victoria, which can be used to inform CERA and increase the ratings confidence. Flood data is provided by flood studies that are prepared by specialist hydraulic and hydrological consultants. Flood studies provide probabilistic estimates of flood extents and characteristics and have typically been used to support land use planning decisions. These assessments of flood susceptibility are not undertaken in accordance with NERAG; rather, a flood damages estimate is prepared for a range of statistical design floods, which may be then used to test the effectiveness of potential flood mitigation options.

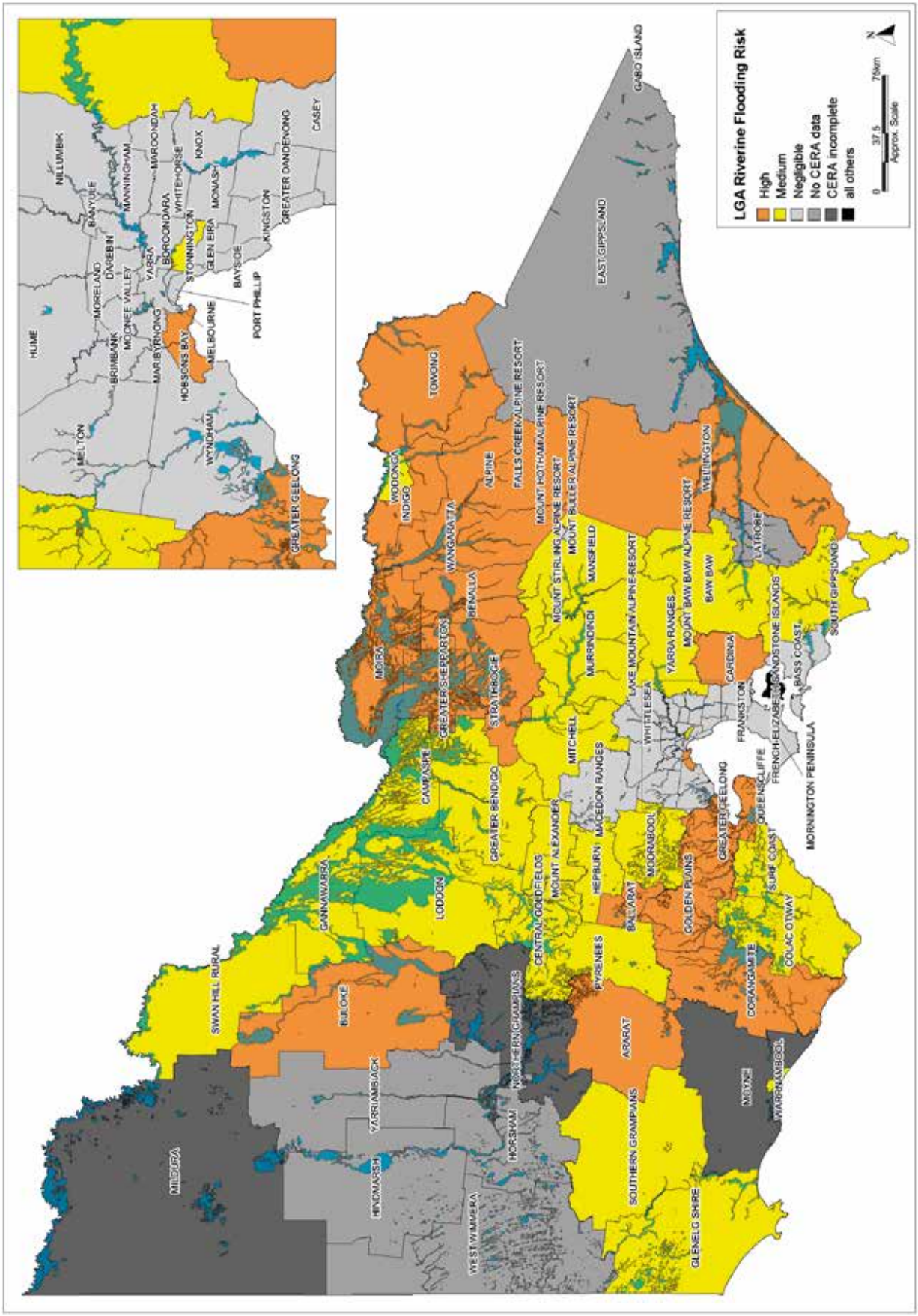
The Annual Exceedance Probability (AEP) is the likelihood of the occurrence of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood flow of 500 m^3/s has an AEP of 5%, it means that there is a 5% chance (i.e. 1-in-20 chance) of a flow of 500 m^3/s or larger occurring in any one year[6].

DELWP has developed a web-based flood intelligence platform (known as FloodZoom) to be the authoritative source of flood intelligence before, during and after floods.

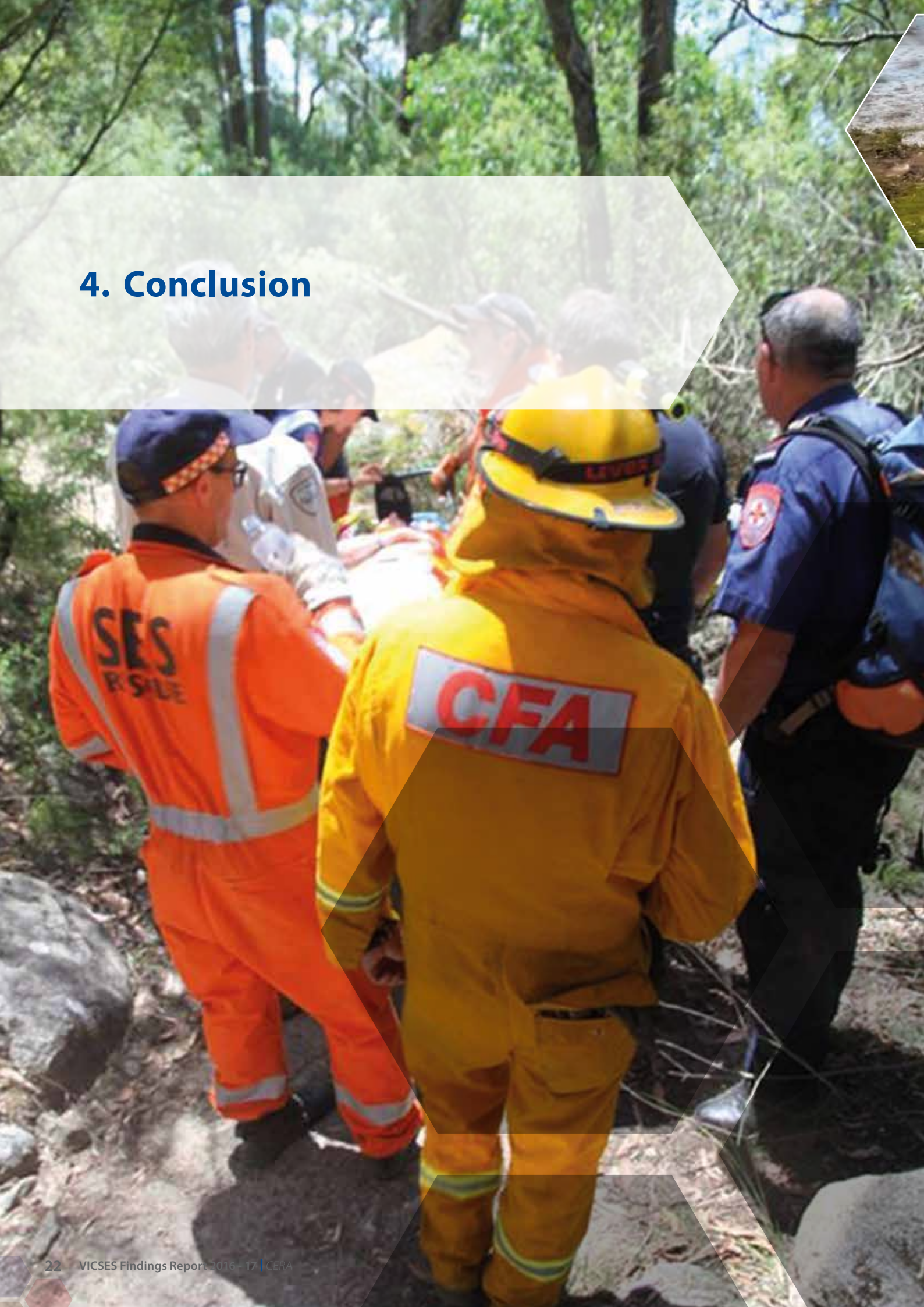
Figure 8 overlays the 1% AEP flood extent from FloodZoom over the CERA outputs. The flood hazard data, while not reflective of the average risk of flooding for the state, shows general alignment with the assessment of residual risk for moderate or major riverine flooding.

[6] State of Victoria (Department of Environment, Land, Water and Planning) (2016), *Victorian Floodplain Management Strategy*, Section 10: Flood Risk Metrics, Page 28

Figure 8: *CERA 'Flood – riverine' data, with 1% AEP flood data overlay*



4. Conclusion



CERA is unique in that it is the only emergency risk assessment process in Victoria that takes an all hazards integrated approach to risk assessment at the local level. The CERA process is versatile, scalable, applicable at any level, and provides a consistent platform to identify and make evidence-based judgements about local risk priorities.

The CERA process has been primarily developed to assist MEMPCs in meeting their statutory obligations for emergency management planning. CERA facilitates this by providing practitioners with a consistent and rigorous tool to undertake emergency risk assessments for their local community, using a multi-hazard framework. By identifying, assessing, and evaluating emergency risks unique to a municipal district, MEMPCs can consider risks that can inform and drive responsive action to improve the safety and resilience of their communities in an emergency management context.

As emergency management in Victoria becomes increasingly focused on an 'all communities, all emergencies' approach, it is important that risk assessment becomes a similarly integrated effort. The implementation of CERA has enabled the establishment of a collaborative platform to allow for meaningful comparisons between agencies on different hazards and/or hazard footprints further promoting targeted prevention, mitigation treatments and controls. The broad scope of the multi-hazard CERA process is further enhanced when informed by the hazard-specific risk assessments developed by other agencies. Used in conjunction, these different types of risk assessments greatly improve the detail and intelligence that is available for emergency management planning.

Since the implementation of CERA 2.0 in 2013, VICSES has facilitated and supported the CERA process for 81 local government entities, in addition to multiple key infrastructure sites. Though the use of CERA is not mandatory for municipalities, the rate of uptake has been extremely high, demonstrating that it is considered to be a valuable risk assessment process.

As CERA enters the next phase of implementation, VICSES is working to enhance the program to better support the ongoing maintenance of existing CERA assessments undertaken by MEMPCs. VICSES will continue to strengthen the linkages between CERA and other risk assessments available in Victoria, including promoting potential opportunities for CERA outputs to help inform regional and state level risk assessment and planning. Additionally, VICSES will support expanding the use of CERA for other stakeholders, including industry, where these opportunities exist.

As part of our commitment to community safety and resilience in Victoria, VICSES continues to support local governments, alpine resorts, MEMPCs and other stakeholders by facilitating CERA assessments across the state, and by working continuously with our partners and stakeholders to embrace a continuous improvement approach to better reflect key partner and stakeholder needs and concepts of shared responsibility.

TESTIMONIAL

The Community Emergency Risk Assessment process has allowed Moonee Valley City Council (MVCC) to develop an efficient framework approach, allowing for the identification of hazards that present risk to the Moonee Valley community. By utilising this risk assessment process it has allowed for the identification of vulnerabilities in process and protections systems, security, health and inclement weather impacts.

It provides a simple community-centred risk assessment and management for natural and technological hazards. The process has provided the means to identify programs through the identification of risk to implement programs that will assist in protecting the community through improved safety and the promotion of resilience in the local community from hazards and emergencies.

SHARON NUNN

Emergency Management Officer,
Moonee Valley City Council

5. CERA results

5. CERA results

The maps provided in this section illustrate the most commonly identified risks in Victoria and within VICSES regions. They are intended to show commonality of risks identified by the municipalities within these geographical areas, and do not necessarily demonstrate the highest regional risks.

Hazard grouping

The CERA tool provides a list of 61 emergency hazards across six hazard categories: natural disasters, transport, human-caused, infrastructure, technical and biological. The committee can choose from these hazards, or otherwise the tool also allows additional hazards to be added in for assessment where they are not already represented.

The ability to add custom hazards has resulted in a total of 238 individual hazards being assessed for this report. In order to enable a) comparison between the municipalities, and b) presentation of the data, the hazards have been grouped according to their similar properties. Once duplicate hazards were combined, a total of 101 distinct hazards were then grouped into 15 broader categories; for a full list of the hazards in each group, see **Appendix 1**.

Where a CERA assessment identified multiple instances of related hazards in the same municipality, only the highest residual risk has been presented in this report.

For example, Melbourne MEMPC rated five different categories of transport accident: *'Transport Incident – Aircraft'*, *'Transport Incident – Marine, Commercial'*, *'Transport Incident – Marine, Recreational'*, *'Transport Incident – Train, Rail'* (all rated as a medium residual risk),and *'Major Vehicle Accident'*, which was rated as a high residual risk. These traffic hazards are then categorised together as 'Traffic Accident' and rated as a high residual risk.

Hazard ratings

After completing CERA, each hazard identified as a posing a risk to the municipality will be rated as Low, Medium, High or Extreme (refer to **Table 1**). The ratings for each municipality are presented in this section, organised by VICSES region.

Where hazards have not been identified by a particular municipality, or where they have not been rated, they are presented here as 'negligible'. It is important to note that this does not necessarily mean the the hazard presents little or no risk to the municipality.

Where municipalities used a risk assessment process other than CERA 2.0, the data is not considered to be comparable and is therefore presented in this section as 'No CERA data'. Further information on this data can be found in **Appendix 3** and **Appendix 4**.

At the time of printing, CERA assessments for three municipalities are still in progress and no data is currently available for them. These are presented throughout this section as 'CERA Incomplete'.

5.1 CERA results across Victoria

5.1.1 Top three most common hazards identified across Victoria

Heatwave

Heatwave was identified as the risk hazard most commonly identified across Victoria, with four municipalities rating it as Extreme, 48 as High, and 16 as Medium.

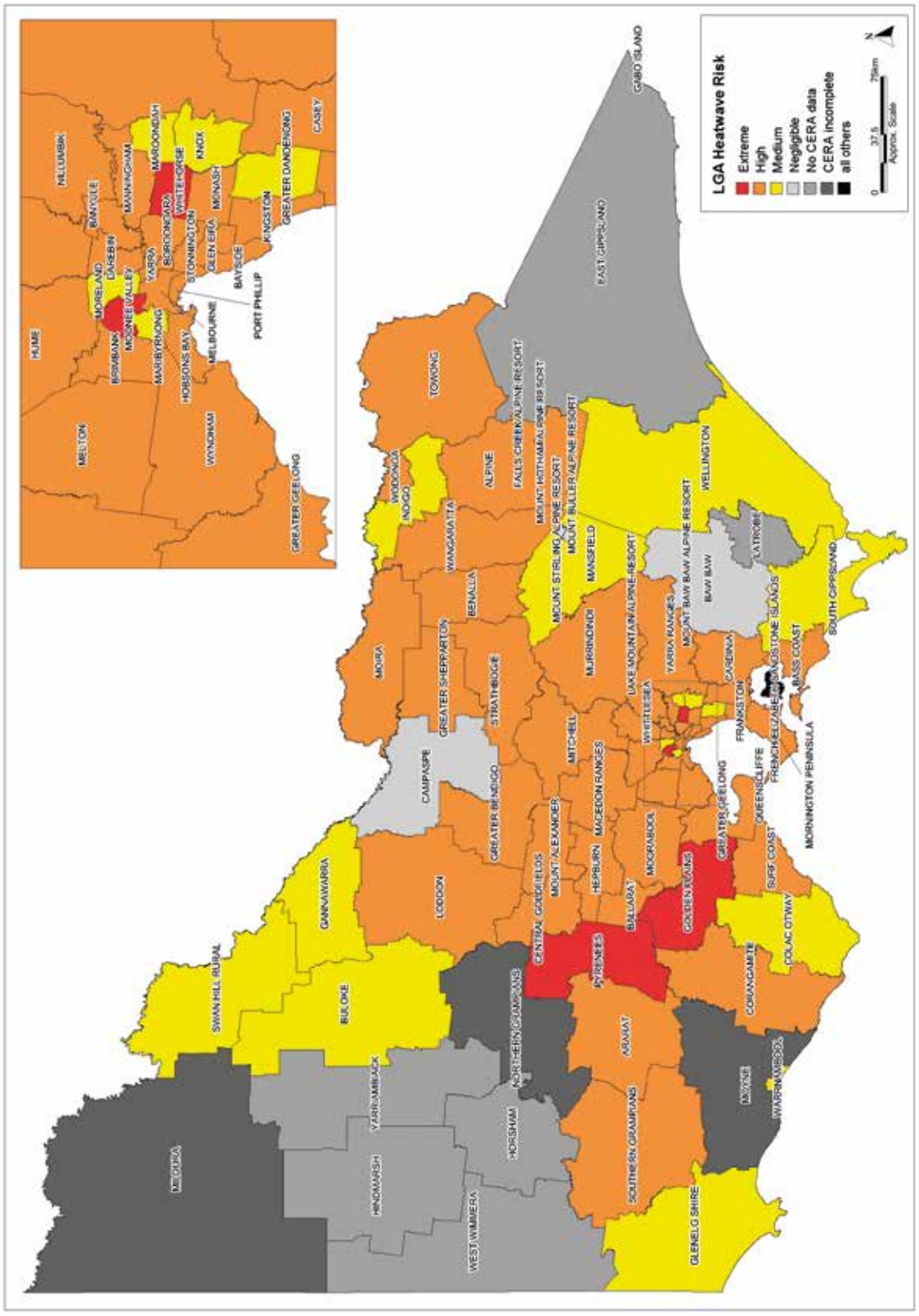


Figure 9: Statewide CERA data for heatwave

5.1 CERA results across Victoria *continued*

Bushfire - large

Bushfire - large was identified as the second risk hazard most commonly identified across Victoria, with two municipalities rating it as Extreme, 42 as High and eight as Medium.

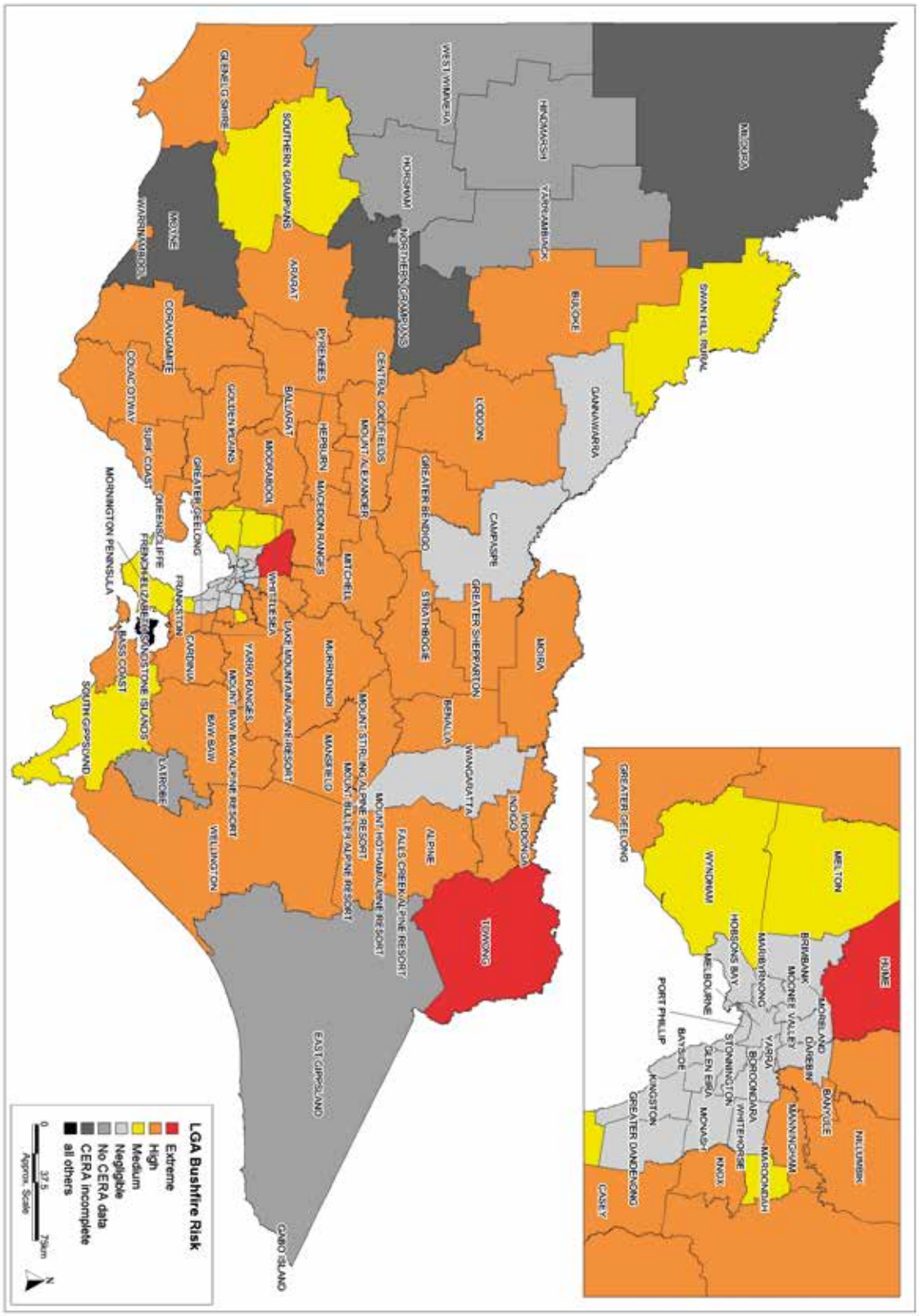


Figure 10: *Statewide CERA data for bushfire - large*

5.1 CERA results across Victoria *continued*

Storm

Storm was identified as the third risk hazard most commonly identified across Victoria, with one municipality rating it as Extreme, 32 as High, 29 as Medium and one as Low.

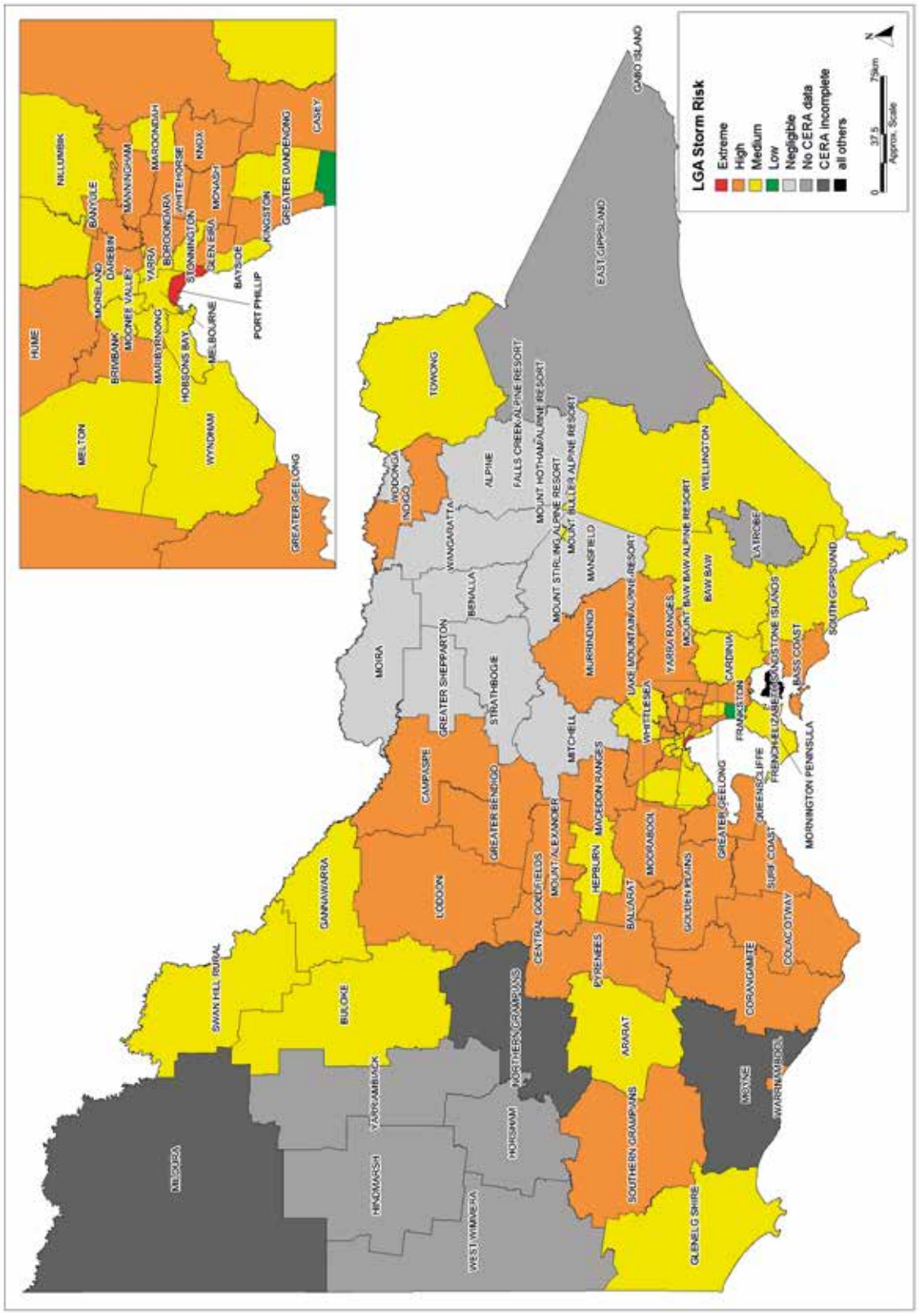


Figure 11: *Statewide CERA data for storm*

5.2 Central Region CERA data

The following data includes information about municipalities within the Central Region of Victoria; all of the 31 municipalities have completed a CERA assessment.

5.2.1 Tabular data

	Banyule	Bayside	Boroondara	Brimbank	Cardinia	Casey	Darebin	Frankston	Glen Eira	Greater Dandenong	Hobsons Bay	Hume	Kingston	Knox	Manningham
Animal or plant disease	N	N	N	N	M	M	N	N	N	N	N	N	N	N	N
Biological incident	E	M	N	N	N	L	N	M	L	M	N	N	N	N	N
Bushfire - large	H	N	N	N	H	H	N	M	N	N	N	E	N	H	H
Bushfire - small	M	N	N	N	N	N	N	N	N	L	N	N	M	N	M
Fire - other	H	M	M	M	N	H	M	N	M	M	M	H	N	M	M
Flood - riverine	N	N	N	N	H	N	N	N	N	N	H	N	N	N	N
Hazardous materials	N	M	H	M	M	H	L	M	H	N	M	H	H	M	M
Heatwave	H	H	H	H	H	H	H	H	H	M	H	H	H	M	H
Human caused	M	N	H	N	N	H	M	M	H	M	N	M	H	N	N
Human epidemic / pandemic	E	M	H	M	M	H	M	M	N	H	M	H	N	H	H
Natural disasters	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N
Storm	H	M	H	H	M	H	H	L	H	M	M	H	H	H	H
Structure failure	N	N	N	N	H	N	N	N	M	N	N	N	N	N	N
Traffic accident	H	M	H	H	M	M	M	M	M	H	N	E	H	M	H
Utility outage	M	M	H	H	N	M	M	M	H	M	M	N	M	N	N

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA incomplete

Table 2: Central Region CERA data (tabular)

5.2 Central Region CERA data *continued*

	Maribyrnong	Maroondah	Melbourne	Melton	Monash	Moonee Valley	Moreland	Mornington Peninsula	Nillumbik	Port Phillip	Stonnington	Whitehorse	Whittlesea	Wyndham	Yarra	Yarra Ranges
Animal or plant disease	N	N	N	N	N	N	N	H	N	N	N	N	N	N	N	M
Biological incident	M	N	N	N	L	N	N	H	N	M	N	N	N	N	N	M
Bushfire - large	N	M	N	M	N	N	N	M	H	N	N	N	H	M	N	H
Bushfire - small	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N
Fire - other	M	M	H	M	M	M	M	H	M	H	M	H	H	H	M	N
Flood - riverine	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	M
Hazardous materials	M	N	M	M	N	N	M	M	M	N	N	N	M	H	M	L
Heatwave	M	M	H	H	H	E	M	H	H	H	H	E	H	H	H	H
Human caused	H	M	H	N	H	H	M	N	N	M	N	M	N	N	H	N
Human epidemic / pandemic	M	M	M	M	M	H	M	H	M	H	H	H	H	H	H	H
Natural disasters	N	N	M	N	N	N	L	N	N	L	N	N	N	N	N	H
Storm	M	M	M	M	H	M	M	M	M	E	M	H	M	M	M	H
Structure failure	N	N	M	N	N	M	N	N	L	M	N	N	N	N	N	L
Traffic accident	H	M	H	M	M	H	M	H	H	M	M	H	H	N	M	M
Utility outage	M	M	M	M	M	H	M	M	N	M	M	M	M	H	H	M

5.2 Central Region CERA data *continued*

5.2.2 Top two most common hazards identified in Central Region

Heatwave

Heatwave was identified as the risk hazard most commonly identified within Central Region, with two municipalities rating it as Extreme, 24 as High and five as Medium.

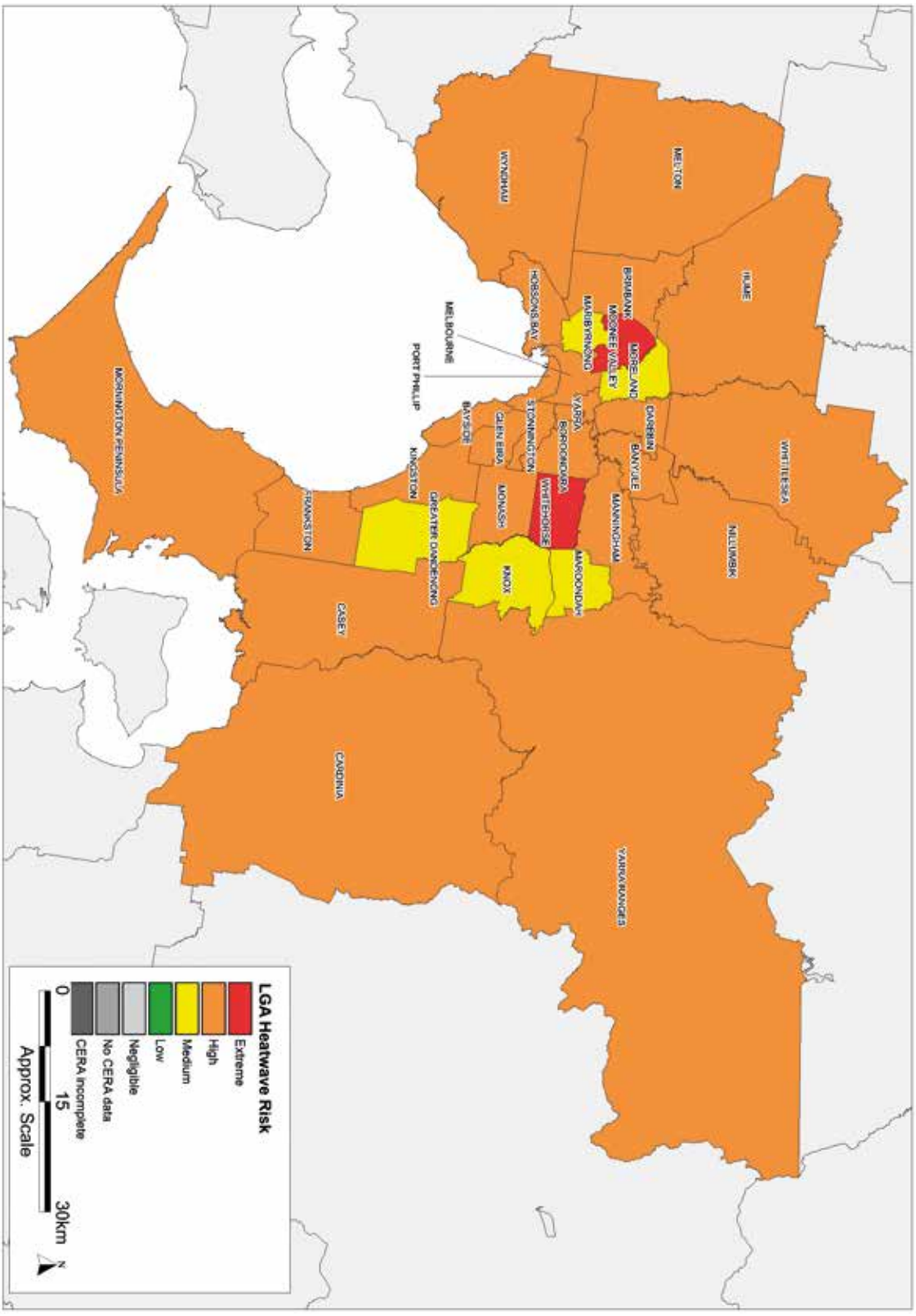


Figure 12: *Central region CERA data for Heatwave*

5.2 Central Region CERA data *continued*

Human Epidemic / Pandemic

Human Epidemic / Pandemic was identified as the second risk hazard most commonly identified within Central Region, with one municipality rating it as Extreme, 15 as High and 13 as Medium.

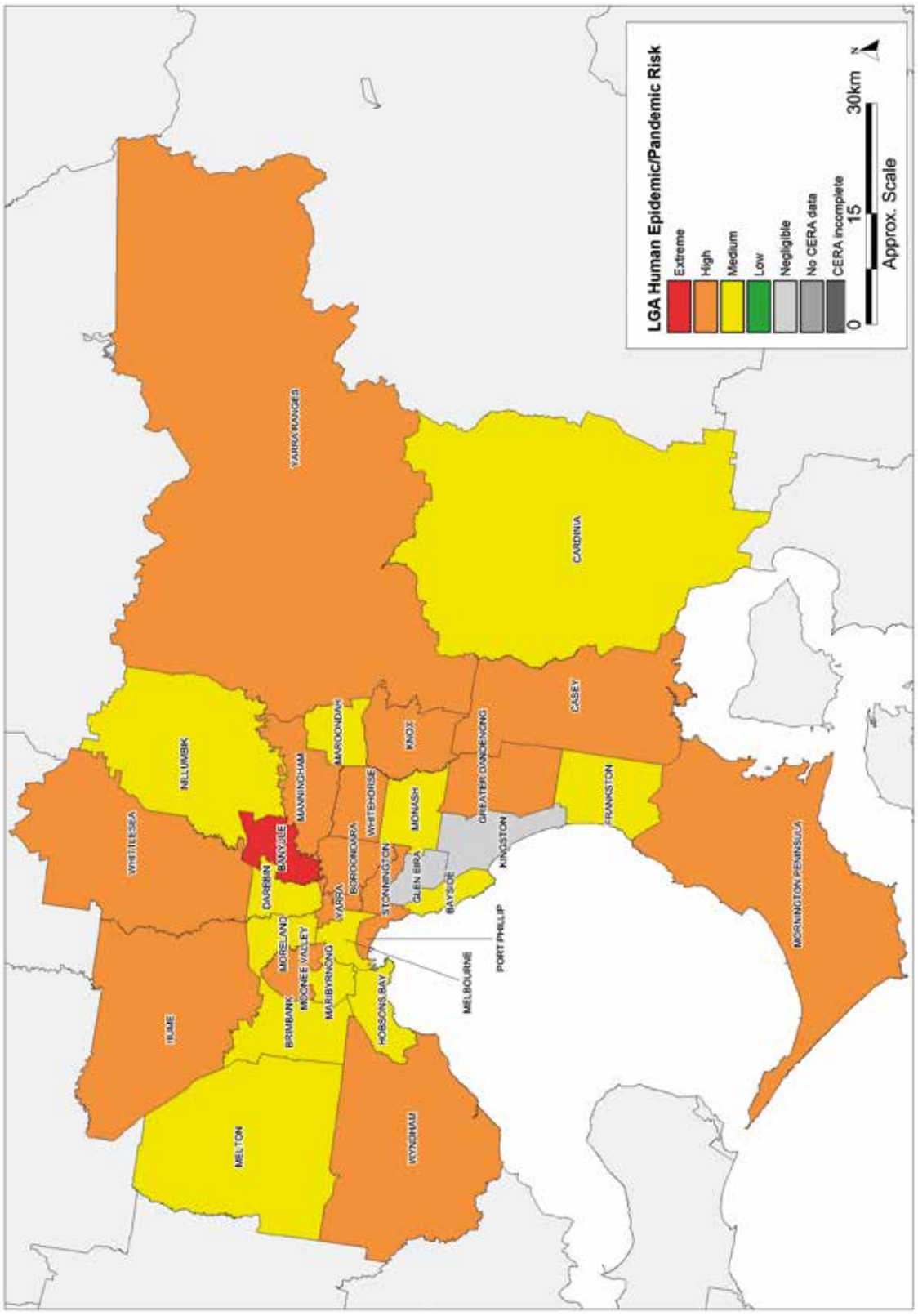


Figure 13: *Central region CERA data for Human Epidemic/Pandemic*

5.3 East Region CERA data

The following data includes information about municipalities within the East Region of Victoria.
All six municipalities in this region have completed a CERA assessment, however, East Gippsland and Latrobe used an earlier version of the CERA tool, which collected data that is not comparable with the current tool.
The risk data for these municipalities can be found in **Appendix 4**.

5.3.1 Tabular data

	Bass Coast	Baw Baw	East Gippsland	Latrobe	South Gippsland	Wellington
Animal or plant disease	M	M			M	M
Biological incident	M	M			L	M
Bushfire - large	H	H			M	H
Bushfire - small	N	N			N	H
Fire - other	H	L			M	N
Flood - riverine	N	M			M	H
Hazardous materials	N	M			N	L
Heatwave	H	N			M	M
Human caused	N	N			L	M
Human epidemic / pandemic	M	M			M	H
Natural disasters	M	M			N	M
Storm	H	M			M	M
Structure failure	M	N			N	M
Traffic accident	H	M			N	M
Utility outage	N	N			M	M

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA incomplete

Table 3: *East region CERA data (tabular)*

5.3 East Region CERA data *continued*

5.3.2 Top three most common hazards identified in East Region

Bushfire – large

Bushfire – large was identified as the risk hazard most commonly identified within East Region, with three municipalities rating it as High and one rating it as Medium.

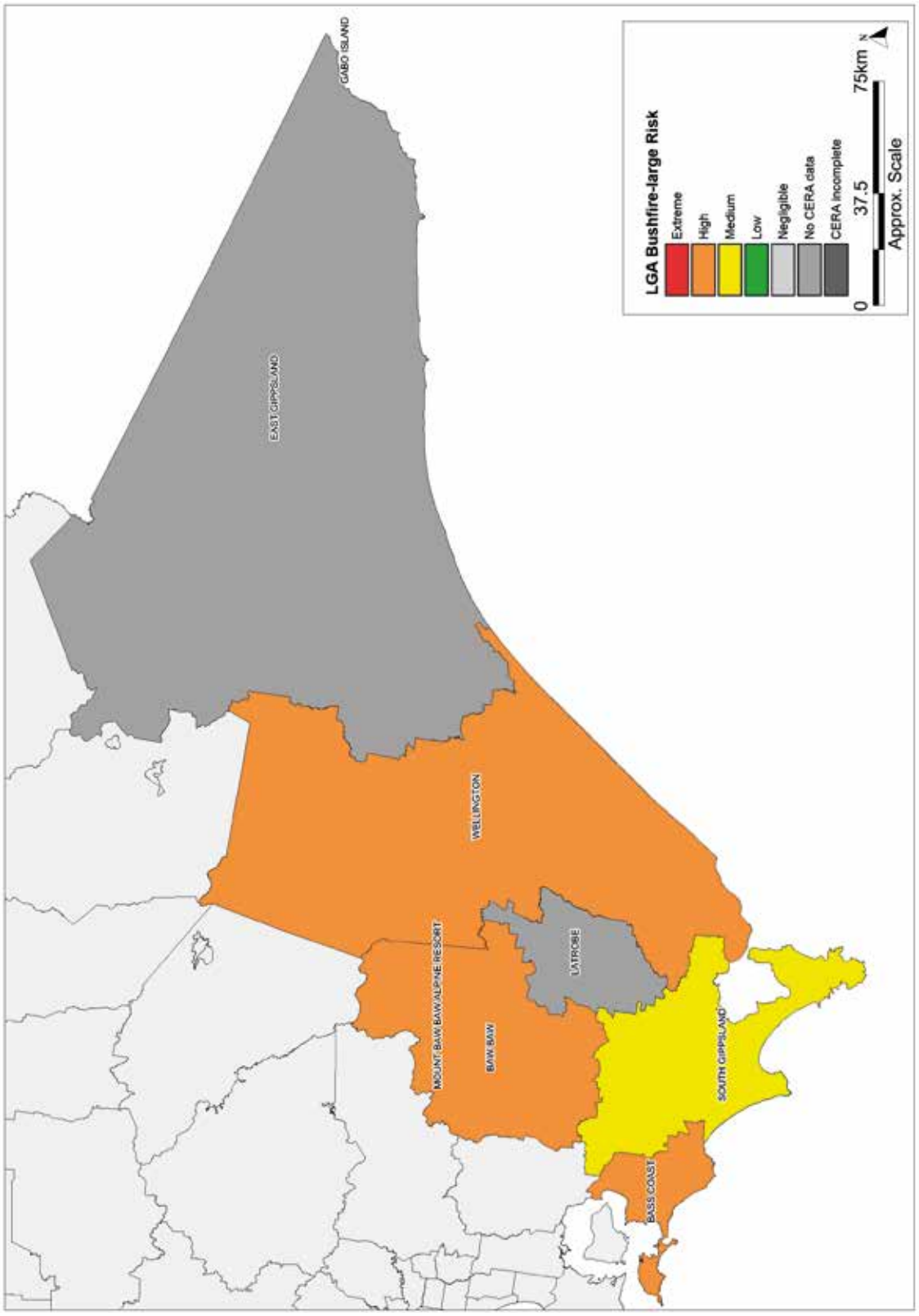


Figure 14: *East Region CERA data for bushfire - large*

5.3 East Region CERA data *continued*

Storm and human epidemic / pandemic

Both ***storm and human epidemic / pandemic*** were identified as the equal second risk hazards most commonly identified within East Region. Each of these risks were rated as High by one municipality, and Medium by three municipalities.

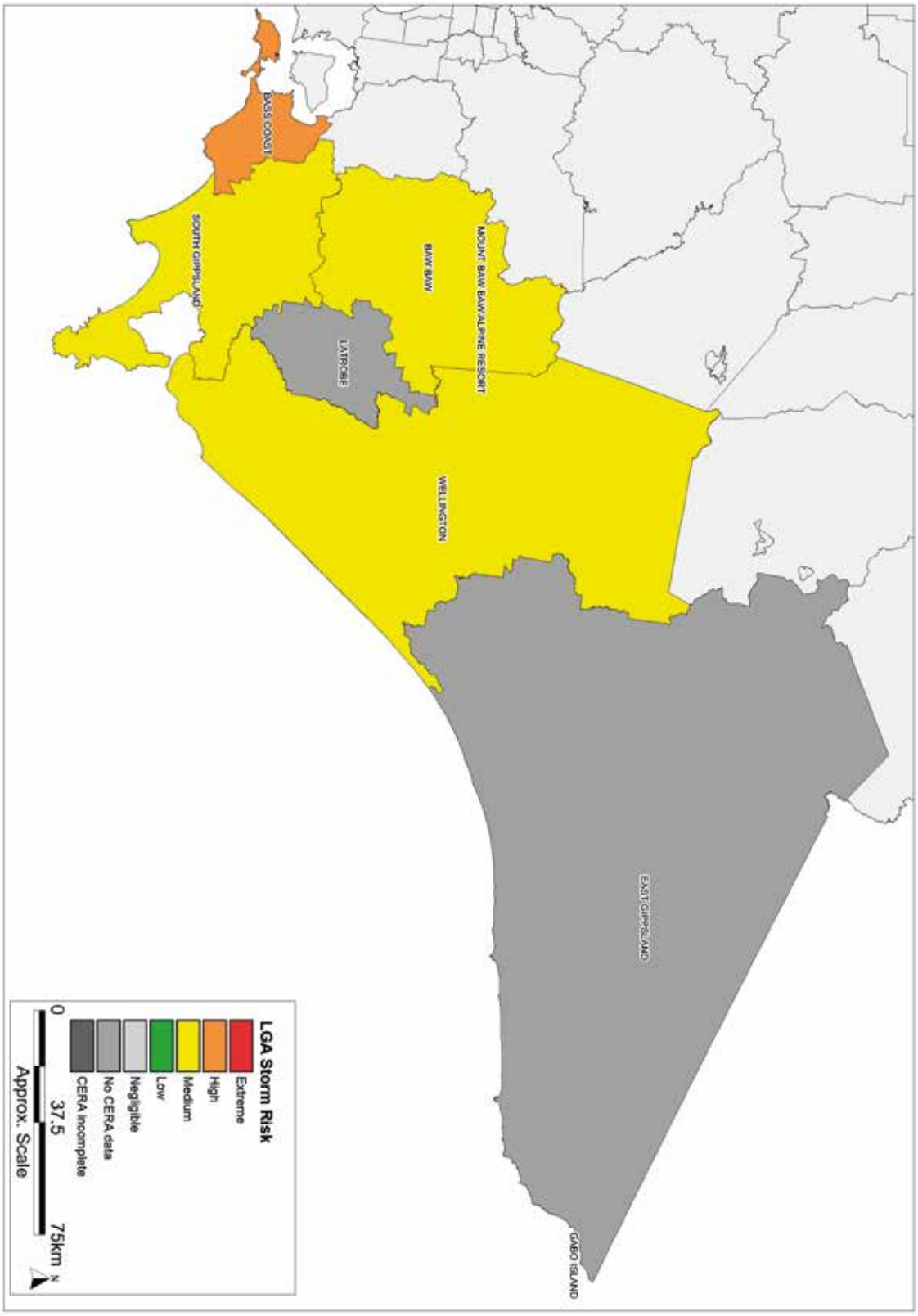


Figure 15: *East Region CERA data for storm*

5.3 East Region CERA data *continued*

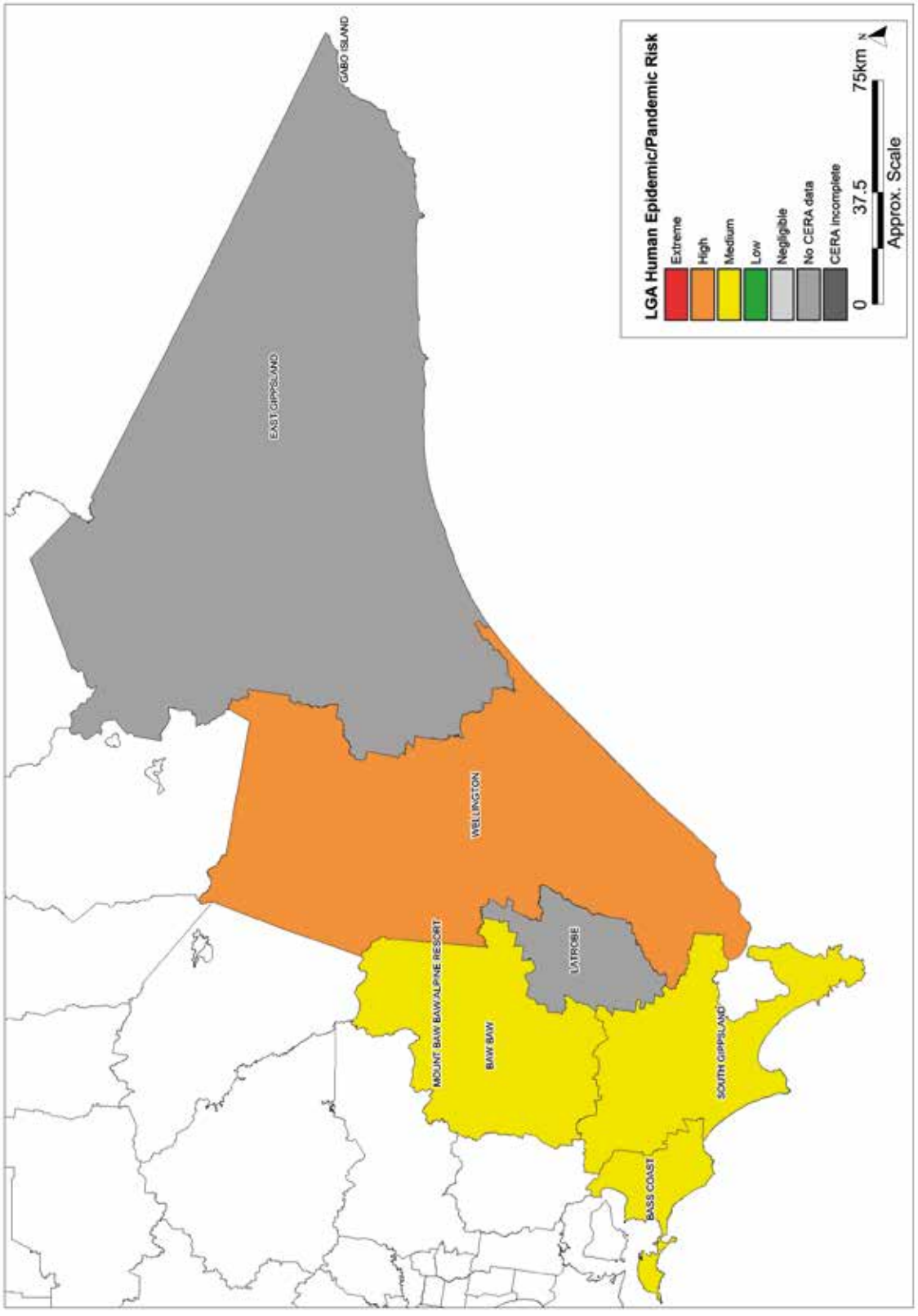


Figure 16: *East Region CERA data for human epidemic / pandemic*

5.4 Mid West Region CERA data

The following data includes information about municipalities within the Mid West Region of Victoria; six out of the 11 municipalities have completed a CERA assessment, one is still in progress (Northern Grampians), and four municipalities chose to use their own *ISO 31000* - compliant risk assessment process (Hindmarsh, Horsham, West Wimmera and Yarriambiack – for the results of these assessments please refer to **Appendix 3**).

5.4.1 Tabular data

	Ararat	Ballarat	Golden Plains	Hepburn	Hindmarsh	Horsham	Moorabool	Northern Grampians	Pyrenees	West Wimmera	Yarriambiack
Animal or plant disease	N	M	M	N			L		N		
Biological incident	N	N	L	L			N		N		
Bushfire - large	H	H	H	H			H		H		
Bushfire - small	N	N	M	N			M		N		
Fire - other	M	H	H	N			M		E		
Flood - riverine	H	H	H	M			M		M		
Hazardous materials	N	M	M	M			M		N		
Heatwave	H	H	E	H			H		E		
Human caused	N	M	N	M			L		H		
Human epidemic / pandemic	H	M	M	H			H		H		
Natural disasters	N	M	L	N			M		N		
Storm	M	H	H	M			H		H		
Structure failure	N	M	L	N			M		M		
Traffic accident	H	H	H	M			M		E		
Utility outage	N	M	H	L			H		H		

E = Extreme | H = High | M = Medium | L = Low | N = Negligible | No CERA data | CERA incomplete

Table 4: *Mid West region CERA data (tabular)*

5.4 Mid West Region CERA data *continued*

5.4.2 Top two most common hazards identified in Mid West Region

Heatwave

Heatwave was identified as the risk hazard most commonly identified within Mid West Region, with two municipalities rating it as Extreme and four as High.

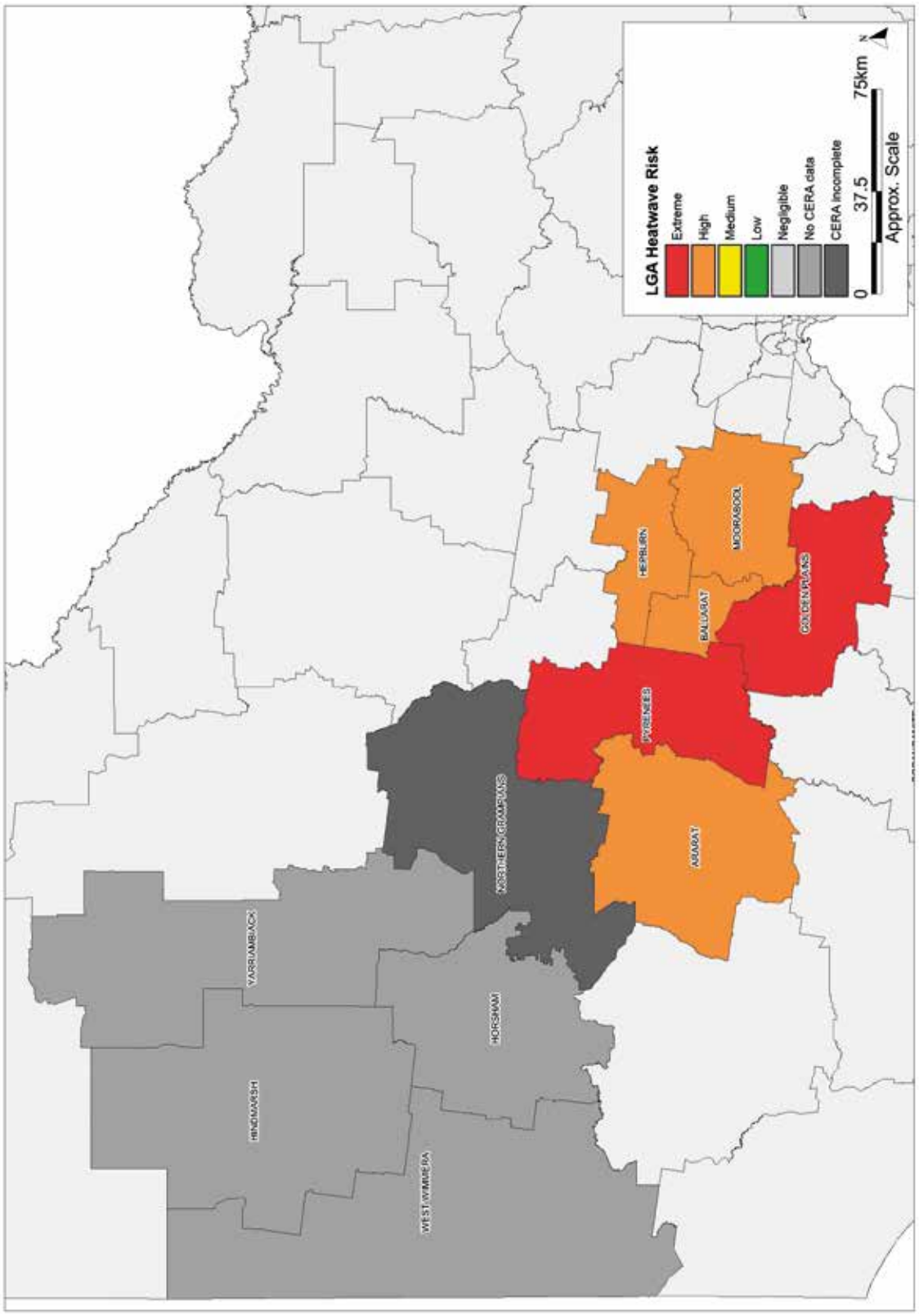


***Figure** 17: Mid West Region CERA data for heatwave*

5.4 Mid West Region CERA data *continued*

Traffic accident

Traffic accident was identified as the second risk hazard most commonly identified within Mid West Region, with one municipality rating it as Extreme, three rating it as High and two rating it as medium.

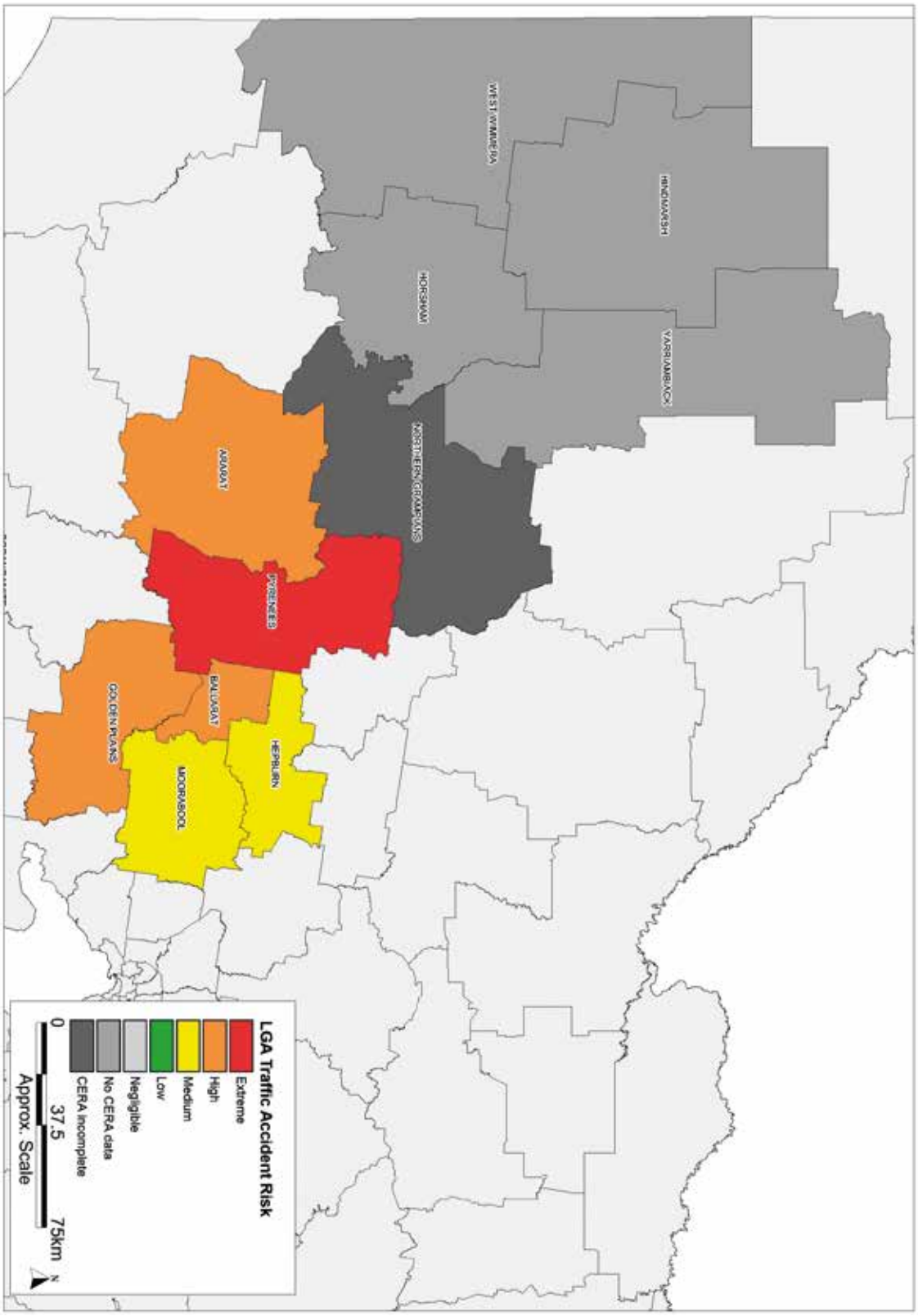


Figure 18: *Mid West Region CERA data for traffic accident*

5.5 North East Region CERA data

The following data includes information about municipalities within the North East Region of Victoria; all 15 municipalities and ARMBs in this region have completed a CERA assessment.

5.5.1 Tabular data

	Alpine	Benalla	Falls Creek ARMB	Greater Shepparton	Indigo	Mansfield	Mitchell	Moira	Mount Buller & Mount Stirling ARMB	Mount Hotham ARMB	Murrindindi / Lake Mountain ARMB	Strathbogie	Towong	Wangaratta	Wodonga
Animal or plant disease	N	L	N	N	H	N	H	N	N	N	N	N	M	N	M
Biological incident	N	N	N	N	N	N	N	M	M	N	N	N	N	N	N
Bushfire - large	H	H	H	H	H	H	H	H	H	H	H	H	E	N	H
Bushfire - small	N	N	N	N	N	N	N	N	N	N	N	N	N	M	N
Fire - other	N	N	H	N	H	N	N	N	N	M	N	N	N	L	M
Flood - riverine	H	H	N	H	H	M	M	H	N	N	M	H	H	H	M
Hazardous materials	N	N	M	N	N	N	N	N	N	N	N	N	N	M	N
Heatwave	H	H	N	H	M	M	H	H	N	N	H	H	H	H	H
Human caused	N	N	N	N	N	M	N	N	M	N	M	N	H	N	N
Human epidemic / pandemic	M	M	M	H	M	M	M	M	N	L	M	M	M	H	M
Natural disasters	N	N	M	N	N	N	N	N	M	N	M	N	N	N	N
Storm	N	N	M	N	H	N	N	N	M	N	H	N	M	N	N
Structure failure	N	N	M	N	N	N	N	N	L	N	M	N	M	L	M
Traffic accident	M	H	H	N	N	N	N	N	N	N	M	H	N	M	N
Utility outage	M	M	H	N	N	N	N	N	N	M	N	N	M	M	M

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA incomplete

Table 5: North East Region CERA data (tabular)

5.5 North East Region CERA data *continued*

5.5.2 Top two most common hazards identified in North East Region

Bushfire – large

Bushfire – large was identified as the risk hazard most commonly identified within North East Region, with one municipality rating it as Extreme and 13 as High.

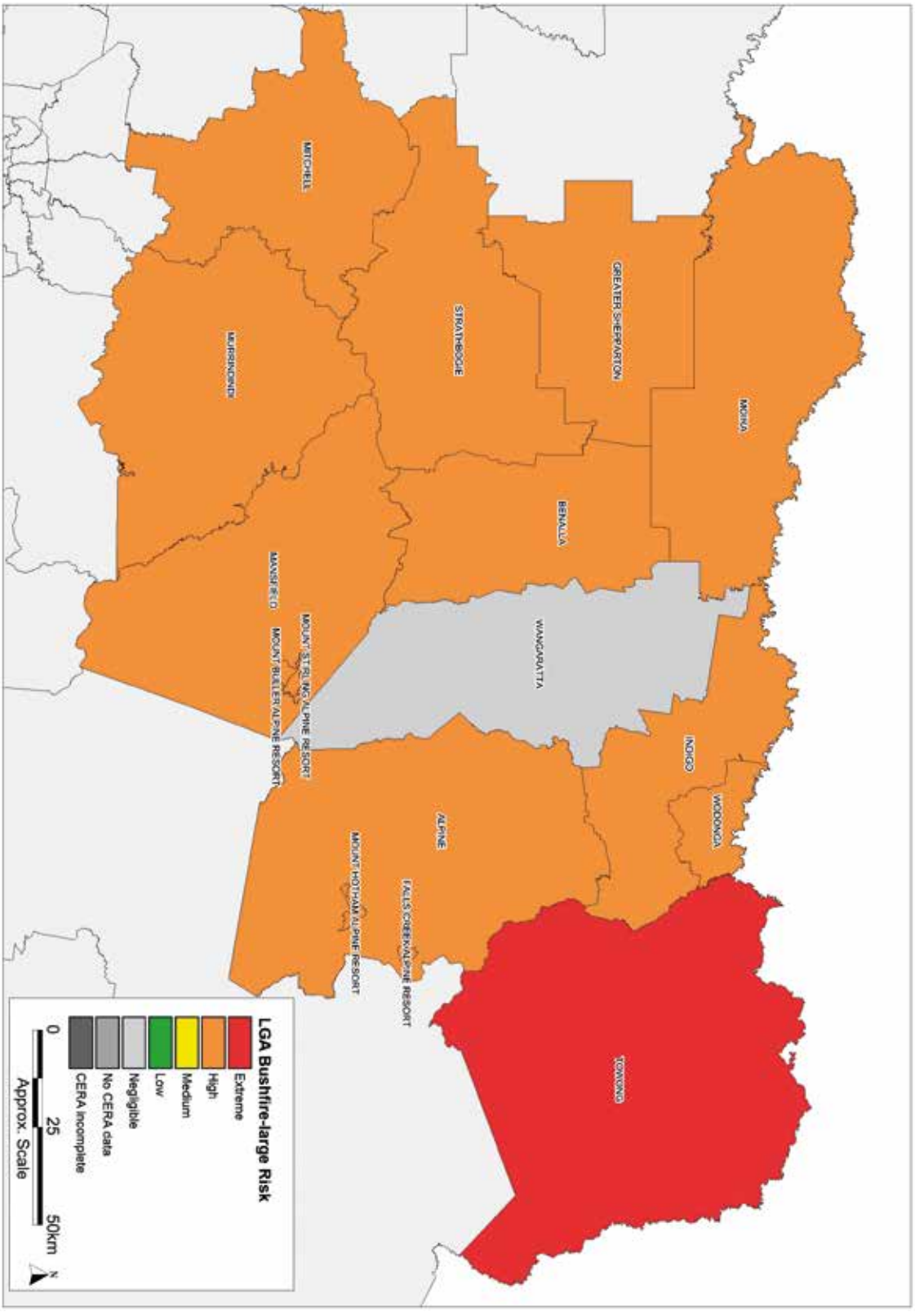


Figure 19: *North East Region CERA data for bushfire - large*

5.5 North East Region CERA data *continued*

Heatwave

Heatwave was identified as the second risk hazard most commonly identified within North East Region, with 10 municipalities rating it as High, and two as Medium.

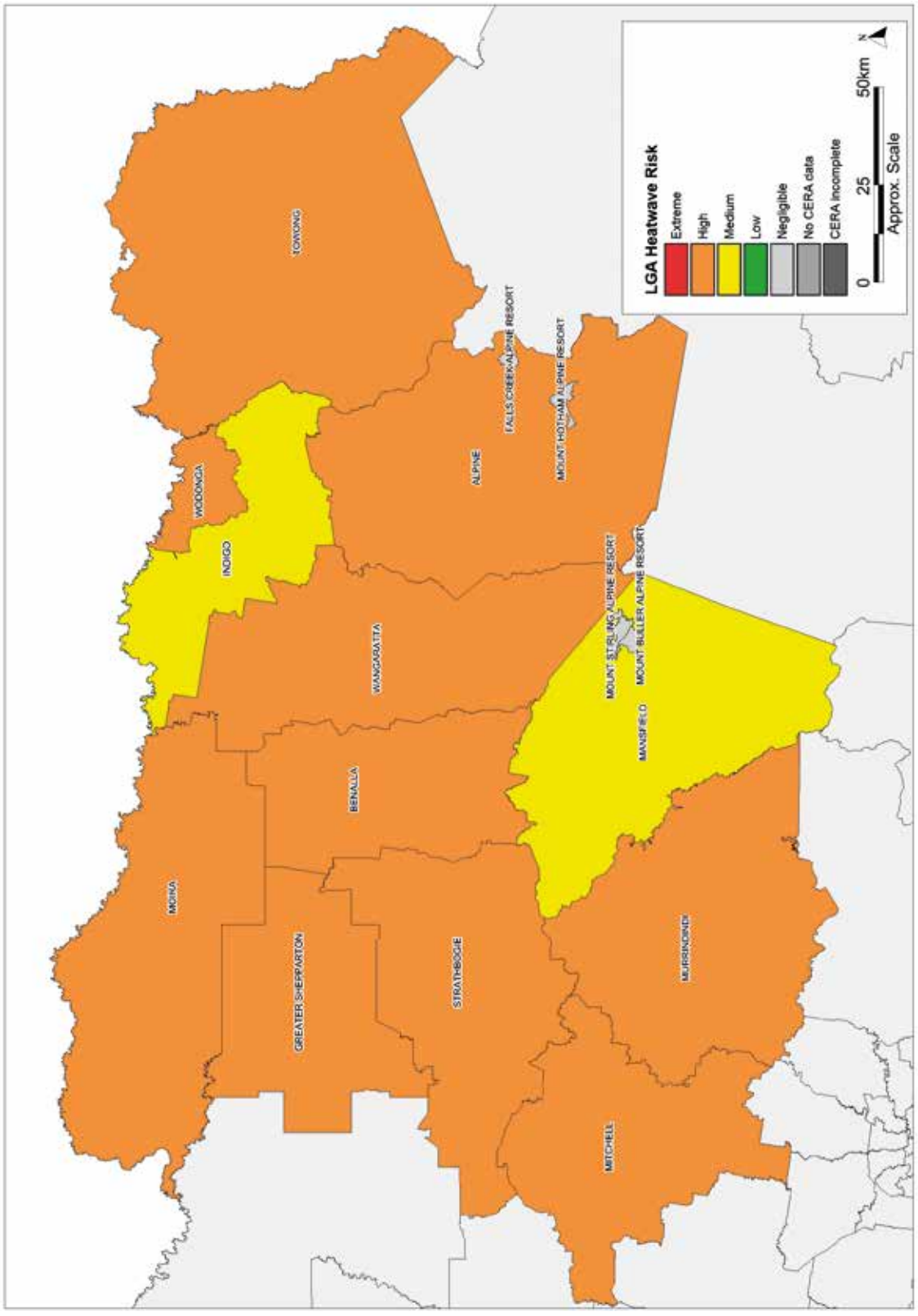


Figure 20: *North East Region CERA data for heatwave*

5.6 North West Region CERA data

The following data includes information about municipalities within the North West Region of Victoria; nine of the 10 municipalities have completed a CERA assessment. Bendigo, Loddon, Central Goldfields, Mount Alexander and Campaspe have taken a cluster approach to emergency management planning, and consequently completed a combined CERA. In addition to this cluster CERA, Campaspe has completed its own CERA, and gap assessments are being conducted by some of the councils to ensure that no municipality-specific risks have been overlooked. The Mildura CERA is still in progress as of May 2017, and no data is currently available.

5.6.1 Tabular data

	Buloke Shire Council	Campaspe Shire Council	Central Goldfields Shire Council	Gannawarra Shire Council	Greater Bendigo City Council	Loddon Shire Council	Macedon Ranges Shire Council	Mildura Rural City Council	Mount Alexander Shire Council	Swan Hill Rural City Council
Animal or plant disease	N	H	N	M	N	N	M		N	N
Biological incident	N	N	N	N	N	N	N		N	M
Bushfire - large	H	N	H	N	H	H	H		H	M
Bushfire - small	N	M	N	M	N	N	N		N	N
Fire - other	E	M	N	N	N	N	N		N	H
Flood - riverine	H	M	M	M	M	M	N		M	M
Hazardous materials	M	N	N	N	N	N	N		N	L
Heatwave	M	N	H	M	H	H	H		H	M
Human caused	N	N	N	N	N	N	N		N	N
Human epidemic / pandemic	M	M	M	M	M	M	M		M	M
Natural disasters	N	N	L	N	L	L	N		L	L
Storm	M	H	H	M	H	H	H		H	M
Structure failure	N	N	N	N	N	N	N		N	N
Traffic accident	H	N	N	N	N	N	M		N	N
Utility outage	N	N	N	N	N	N	N		N	N

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA incomplete

Table 6: *North West region CERA data (tabular)*

5.6 North West Region CERA data *continued*

5.6.2 Top two most common hazards identified in North West Region

Storm

Storm was identified as the risk hazard most commonly identified within North West Region, with six municipalities rating it as High and three as Medium.

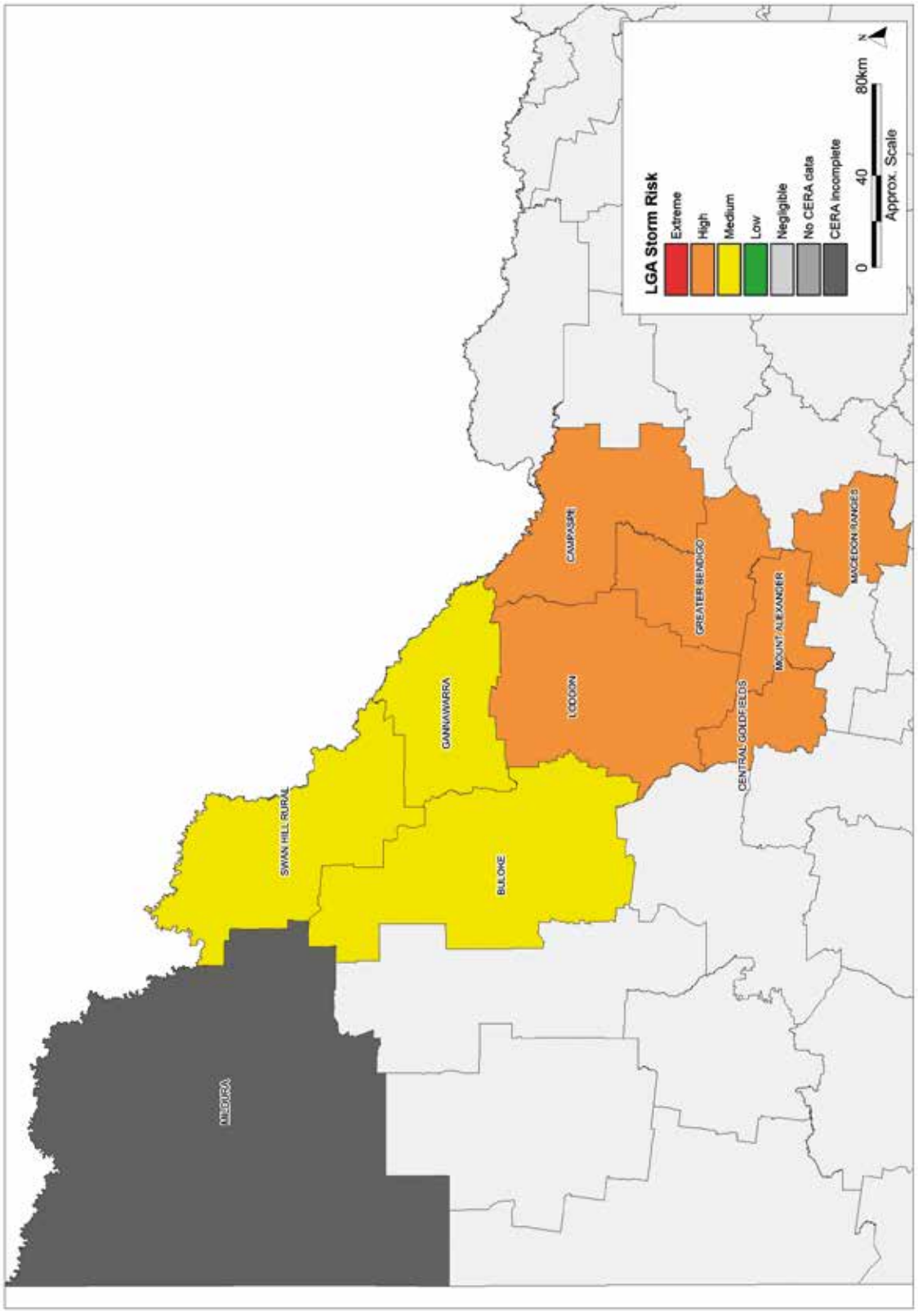


Figure 21: *North West Region CERA data for storm*

5.6 North West Region CERA data *continued*

Bushfire – large

Bushfire – large was identified as the second risk hazard most commonly identified within North West Region, with six municipalities rating it as High, and one as Medium.

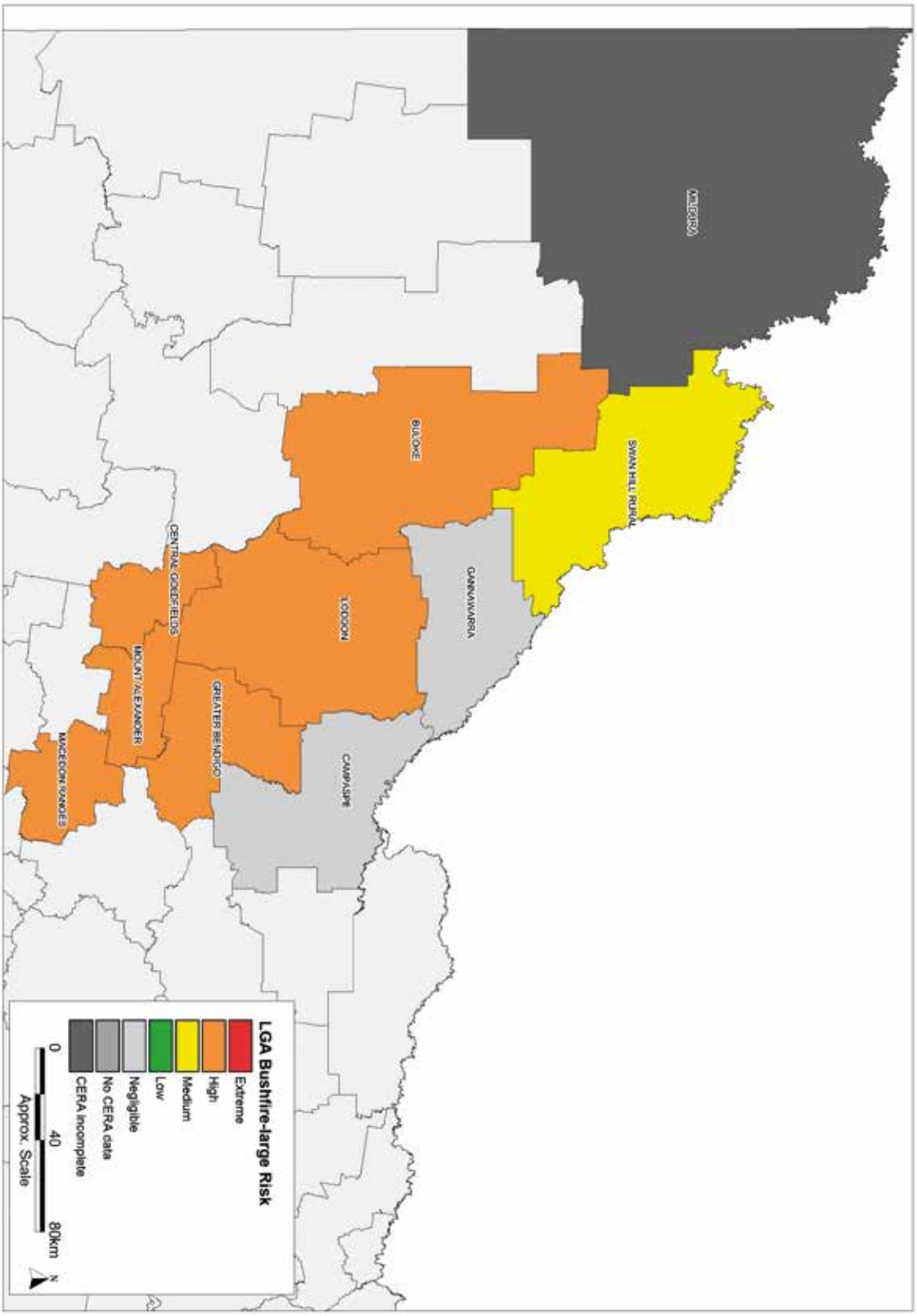


Figure 22: *North West Region CERA data for bushfire - large*

5.7 South West Region CERA data

The following data includes information about municipalities within the South West Region of Victoria; eight of the nine municipalities have completed a CERA assessment, and one (Moyne) is currently in progress.

5.7.1 Tabular data

	Colac-Otway	Corangamite	Glenelg Shire	Greater Geelong	Moyne Shire	Queenscliffe	Southern Grampians	Surf Coast	Warrnambool
Animal or plant disease	N	M	M	N		N	H	N	M
Biological incident	H	M	M	M		M	M	M	M
Bushfire - large	H	H	H	H		N	M	H	H
Bushfire - small	N	N	N	N		M	N	N	N
Fire - other	H	H	M	M		H	H	M	N
Flood - riverine	M	H	M	H		N	M	M	M
Hazardous materials	H	H	M	M		N	N	M	H
Heatwave	M	H	M	H		M	H	H	M
Human caused	M	M	L	H		M	E	H	M
Human epidemic / pandemic	H	H	M	H		M	H	H	M
Natural disasters	H	M	M	H		M	E	H	M
Storm	H	H	M	H		M	H	H	H
Structure failure	M	M	N	M		M	N	L	N
Traffic accident	N	H	N	M		H	E	N	M
Utility outage	M	H	M	N		H	M	M	M

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA Incomplete

Table 7: *South West Region CERA data (tabular)*

5.7 South West Region CERA data *continued*

5.7.2 Top two most common hazards identified in South West Region

Natural disasters

Natural disasters was identified as the risk hazard most commonly identified within South West Region, with one municipality rating it as Extreme, three as High, and four as Medium.

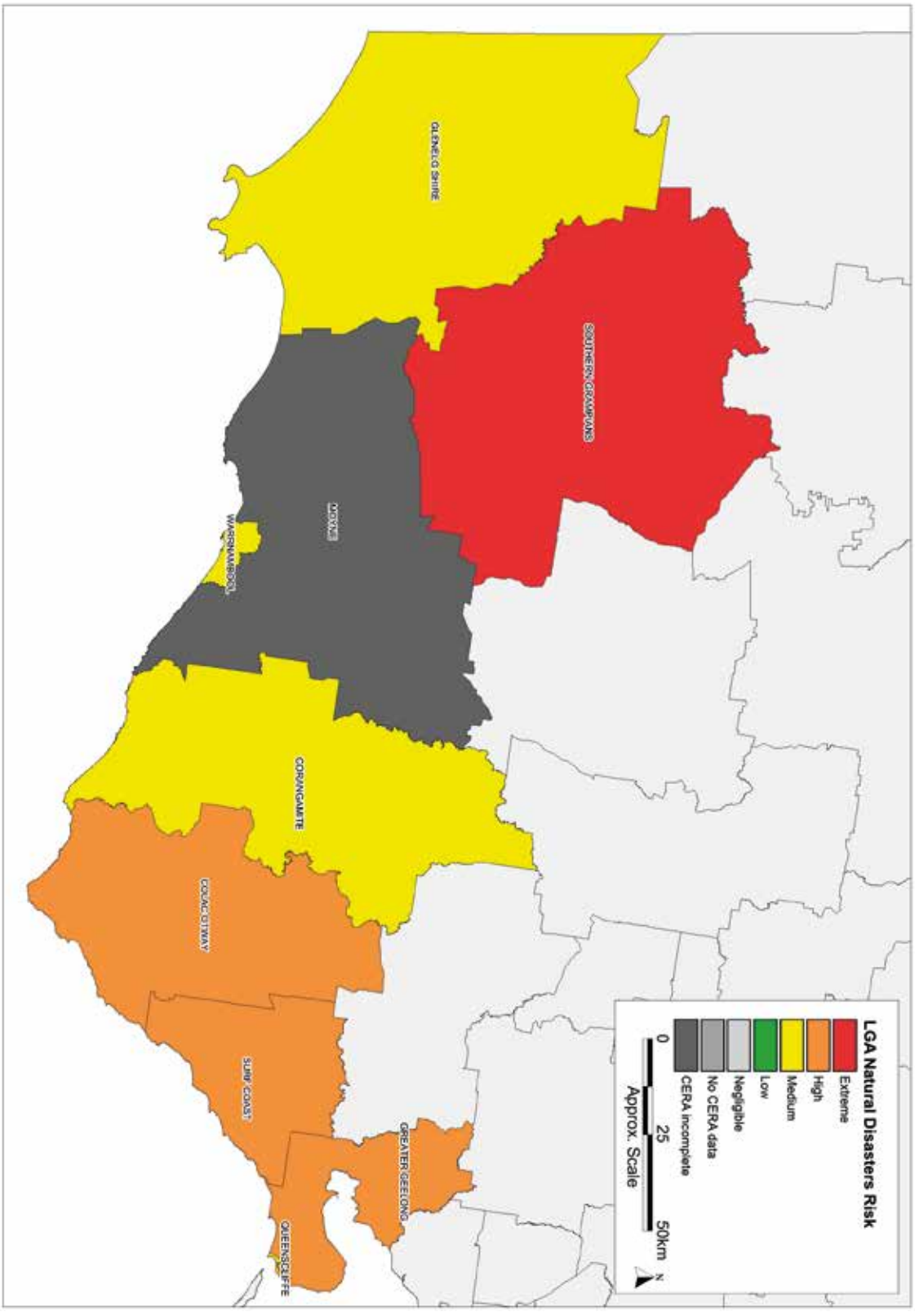


Figure 23: *South West Region CERA data for natural disasters*

5.7 South West Region CERA data *continued*

Human caused

Human caused was identified as the second risk hazard most commonly identified within South West Region, with one municipality rating it as Extreme, two as High, four as Medium, and one as Low.

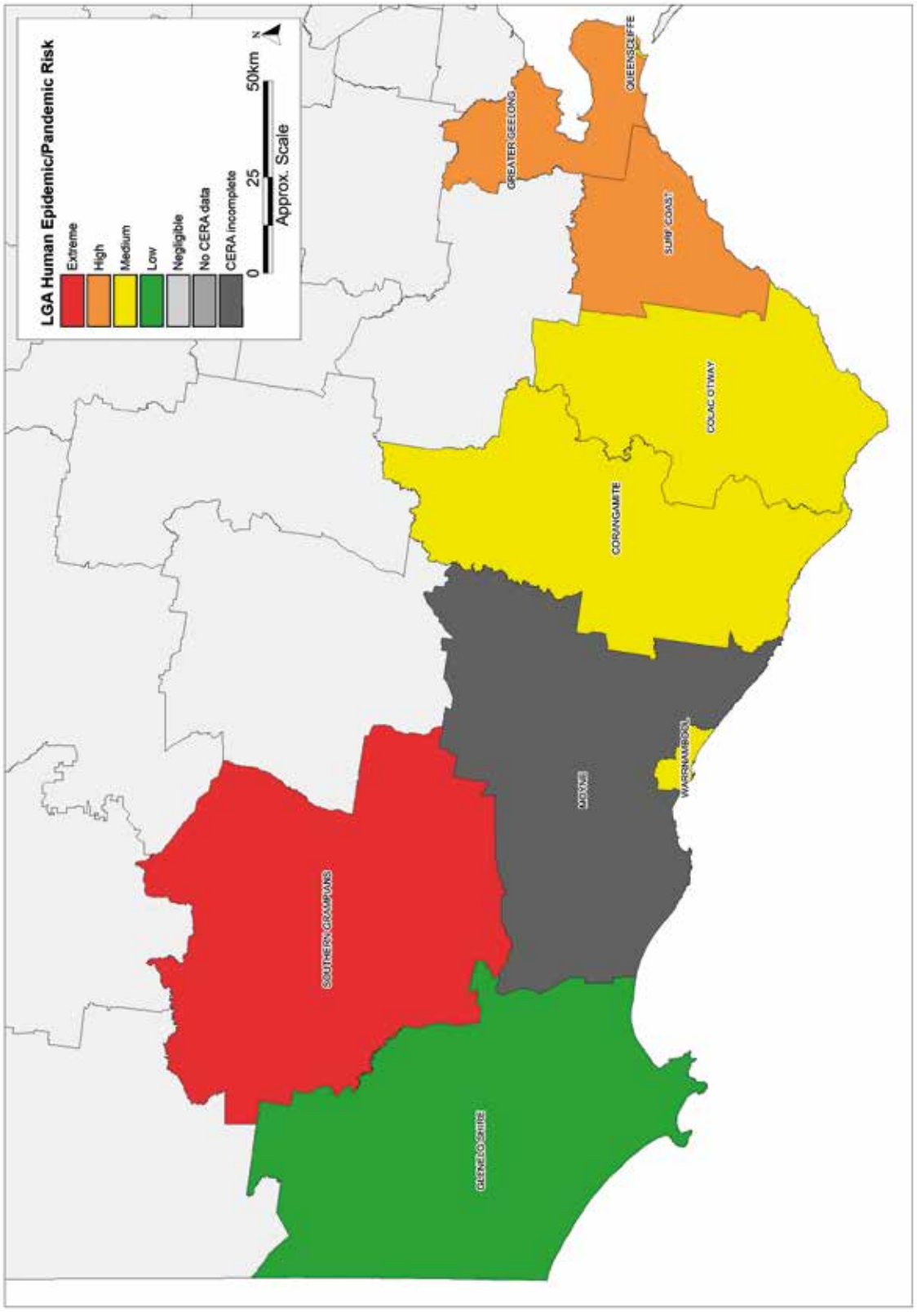


Figure 24: *South West Region CERA data for human caused*

TESTIMONIAL

I found the CERA process quite valuable, with the formatted approach and excellent facilitation by VICSES.

We used a subcommittee approach which was good for networking and building understanding amongst the committee membership. It also enables the emergency services to grab some ideas of the sort of programs Council has in existence.

Overall a very worthwhile exercise.

DANNY EATON

Manager Waste, Hume City Council

6. Appendices

6. Appendices

6.1 Appendix 1 - Hazard groupings

The following table lists the hazard groups and what was included in them. Duplications of hazards have been removed, for example, "Fire – Industrial" was left out as it is already covered by "Fire – Industrial / Commercial".

Hazard Group	Hazard Group Description	Hazards included in group
Animal or Plant Disease	Diseases affecting animals or plants.	Arbovirus Emergency Animal Disease Exotic Animal Disease Insect / Plant / Animal Health Plant and Animal Disease / Incursion / Epidemic Pest Incursion
Biological Incident	Incident that may affect the environment, including air/marine pollution, oil spill, contamination, food/water contamination.	Air Pollution Asbestos contamination Contamination / Pollution Food / Water Supply Contamination Marine Pollution Oil Spill Blue Green Algae Outbreak
Bushfire - large	A significant bushfire or grassfire that may affect multiple municipalities.	Bushfire Bushfire - All Bushfire - large, regional Fire in next region Grassfire
Bushfire - small	A smaller scale bushfire contained to a single local area.	Bushfire - small, isolated
Fire - other	Residential, structural/non-structural, commercial, industrial fires.	Fire - Residential Fire - Tyre stockpile Fire - Industrial / Commercial Fire - Structural Including Housing/Hospitals/Special facilities Fire - Urban Fire Structure / Non Structure Major Building Fire

6.1 Appendix 1 - Hazard groupings *continued*

Hazard Group	Hazard Group Description	Hazards included in group
Flood - Riverine	Flooding of rivers and other existing bodies of water.	Flood - Extreme (probable maximum flood) Flood - Major Flood - Moderate Flooding - Riverine Large Above Ground Urban Basin
Hazardous materials	Release of toxic materials from a facility or transport.	CBR - Incident Hazardous Incident Hazardous Material Release - Facility or Transport Hazmat - Spill release Hazmat/Dangerous Goods Incident Hazardous Materials (Spill / Leak / Emission) Radiation release
Heatwave	Extreme high temperatures.	Extreme Temperatures - Heatwave Other - Heatwave
Human Caused	Incidents caused by people including civil disturbances, unrest, terrorism, bombing, mass gathering, riots etc.	Bombing / Explosion Civil Disturbance Community Event Deliberate and Malicious Public Disruption Disturbance, Shooting, Siege Drowning High Profile Community Malaise/Discomfort Industrial Accident International/National Incident- Recovery Major Events Mass Gathering Mass Relocation Due to Incident Missing Person Public Disorder Public Events Suspicious Package Terrorism Water Safety & Falls from Heights Personal Injury/ Death/Suicide Cyber Attack
Human Epidemic / Pandemic	Widespread infectious human disease.	Anthrax Human Epidemic / Pandemic Major health event Public Health Infectious Disease/Food Poisoning Outbreak

6.1 Appendix 1 - Hazard groupings *continued*

Hazard Group	Hazard Group Description	Hazards included in group
Natural Disasters	Natural disasters such as earthquake, landslip, drought.	Drought Earthquake Geological Event >3.5 Geotechnical failure Hazardous Trees Landslip Tree limbs dropping Tsunami
Storm	Storms, flash floods, storm surge.	Extreme Weather Flash Flood Flood and Storm Flood Levees - Landscaping (Lara Flood Levee System) Severe Weather Event (Storm/Rain/Heat) Storm Storm Surge
Structure Failure	Structural failures including buildings, dams, gas mains.	Gas, Oil, Fuel Main Rupture / Explosion Loss of Road Network Structural Failure - Bridge Structural Failure - Building Structural Failure - Dam Uncontrolled Release of Water from Dam Subsidence due to mining
Traffic Accident	Traffic incident of any form: rail, road, ship, aircraft.	Transport Accident - Involving Aircraft, Rail & Cruise Ship Transport Accident - Major Transport Incident - bus / coach Transport Incident - large commercial vehicle Transport Incident - Marine Transport Incident - Road, Rail
Utility Outages	Outage of utilities including: sewerage, gas, water, electricity, telecommunications.	Service Disruption - Electricity Service Disruption - Essential Services Service Disruption - Gas Service Disruption - Sewerage Service Disruption - Telecommunications Service Disruption - Utilities - Extended Service Disruption - Water Utility Failure

6.2 Appendix 2 – CERA risk assessment criteria

The following tables represent the criteria used in the CERA assessment to rate the level of risk.

Consequence Rating Criteria

	Rating	People	Environment	Economy	Public Administration	Social Setting	Infrastructure
1	**Insignificant**	Near misses or minor injuries, no reliance on health system.	Near misses or incidents without environmental damage, no recovery efforts required	Financial loss < 0.1% of the jurisdiction's revenues, to be managed within standard financial provisions. Inconsequential disruptions at business level.	Governing body manages the event within normal parameters. Public administration functions without disturbances. Public confidence in governance, no media attention.	Inconsequential short-term reduction of services. No damages to objects of cultural significance. No adverse emotional and psychological impacts.	Inconsequential short-term failure of infrastructure and service delivery. No disruption to the public services.
2	**Minor**	Isolated cases of serious injuries. Health system operating within normal parameters. Displacement of people within jurisdictional capacity to cope. Personal support needs being met.	Isolated cases of environmental damage. One-off recovery efforts required to supplement self-repair. Damage localised in extent. Short term impairment of ecosystem functions up to one year.	Financial loss, 0.1-0.3% of the jurisdiction's revenues, requiring activation of reserves to cover loss. Disruptions at business level leading to isolated cases of loss of employment.	Governing body manages the emergency event under emergency regime. Public administration functions with some disturbances. Isolated expressions of public concern. Jurisdiction perceived as able to pursue business as usual despite disruptions.	Isolated and temporary cases of reduced services within community. Repairable damage to objects of cultural/ heritage significance. Localised disruption to community well being and social networks over a small area for a period of weeks.	Infrastructure/ Systems failure impacts on part of community's functioning over a small area for a short period (a few weeks). Localised inconvenience.
3	**Moderate**	Isolated cases of lives lost and/ or some cases of serious injuries. Health system operating at maximum surge capacity. Displacement of people within capacity of the jurisdiction to cope for periods of less than 24 hours. Elements of jurisdictional personal support system operating at maximum capacity.	Isolated but significant cases of impairment or loss of ecosystem function(s) at locality within jurisdiction. Some remedial efforts required for recovery. Medium term impairment up to two years.	Financial loss, 0.3-1% of the jurisdiction's revenues, requiring adjustments to business strategy to cover loss. Disruptions to selected industry sectors leading to isolated cases of business failure and multiple loss of employment.	Governing body manages the emergency event with considerable diversion from policy. Public administration functions limited by focus on critical services. Instances of public protests with emergent alarm. Significant diversion from State policy goal(s) or program(s).	Ongoing reduced services within community. Permanent damage to objects of cultural/heritage significance. Major disruption to community wellbeing and social networks over a locality for a period of months.	Infrastructure/ systems failure puts severe pressure on part of community's functioning over a medium to large area for a medium period (up to three months). Widespread inconveniences but no external support required.

6.2 Appendix 2 – CERA risk assessment criteria *continued*

Consequence Rating Criteria

	Rating	People	Environment	Economy	Public Administration	Social Setting	Infrastructure
4	**Major**	Multiple loss of life (mortality in the order of 0.001% of the jurisdictional population). Health system operating at maximum capacity, under severe pressure. Isolated cases of displacement of people for periods in the order of a day. Jurisdictional personal support system operating at maximum capacity. Normal health care and living standards difficult to maintain.	Severe impairment or loss of ecosystem functions affecting one or more species or regional landscapes. Progressive environmental damage. Extensive recovery effort required. Serious long term impairment or loss of ecosystem function(s) up to five years.	Financial loss, 1-3% of the jurisdiction's revenues, requiring major changes in business strategy to (partly) cover loss. Significant disruptions across industry sectors leading to multiple business failures and loss of employment.	Governing body absorbed with managing the emergency event. Public administration struggles to provide critical services. Loss of public confidence in governance, with serious widespread public outcry and some alarm. State policy goal(s) or program(s) abandoned.	Reduced quality of life within community. Significant loss or damage to objects of cultural/heritage significance. Severe disruption to community well being and social networks over a wide area for up to two years.	Medium to long term (three to six months) failure of significant infrastructure and service delivery affecting large parts of the community. Initial external support required.
5	**Catastrophic**	Widespread multiple loss of life (mortality in the order of 0.01% of the jurisdictional population). Health system over-stressed. Large numbers of displaced people for periods of days or more. Aid sourced from outside the jurisdiction, people leave the jurisdiction to seek help. Normal health care and living standards abandoned.	Widespread severe impairment or loss of ecosystem function(s) across many species and multiple or large regional landscapes. Irrecoverable environmental damage. Permanent loss of ecosystem in its pre-existing form. Limited ecosystem recovery over more than five years.	Unrecoverable financial loss > 3% of the jurisdiction's revenues. Asset destruction across industry sectors leading to widespread business failures and loss of employment	Governing body unable to manage the emergency event. Disordered public administration without effective functioning. Public alarm and unrest, civil order requires inter-jurisdictional reinforcement. Government resigns or alternative governance necessary for some period.	Community ability to support itself severely impaired. Widespread loss of objects of cultural/ heritage significance. Severe disruption to community well being and social networks over the whole area or a large part of it for a period of many years.	Long term failure (over six months) of significant infrastructure and service delivery affecting most of the community. Ongoing external support at a large scale required.

6.2 Appendix 2 – CERA risk assessment criteria *continued*

Consequence Category Definitions

People	The health system, i.e. doctors, hospitals, ambulances at local/regional levels. Local/regionally-based resources and systems to assist people who are displaced from their homes for a length of time. This includes temporary accommodation. Local/regionally-based resources for supporting affected/displaced people with e.g. material aid, food, financial assistance, personal support services.
Environment	The continued normal functioning of significant ecosystems.
Economy	The economy of the local area, considering: – value of overall damage and consequential losses incurred – disruption to particular sectors of industry – need for extraordinary government financial provisions for recovery
Public Administration	Relates to the impacts of the emergency on the governing body's ability to govern.
Social Setting	The ability of the community to maintain normal functioning, its resilience, its social fabric and cultural values and heritage.
Infrastructure	The functionality and continued supply, via the critical infrastructure systems, of the essentials of contemporary society, e.g. fuel, water, telecommunications, transport, food supply, money.

Controls / Mitigation activities rating criteria

	Rating	Criteria
1	**Effective**	Controls in place are effective. There may be no need to change the controls but they should be reviewed for appropriateness.
2	**Moderately effective**	Although current controls are effective, some improvement opportunities may be/have been identified. Further review and analysis suggested
3	**Moderately ineffective**	Controls are in place but may be insufficient to reduce risk consequence and/or likelihood to an acceptable level. Review of controls is highly desirable with potential need for update/remediation.
4	**Very ineffective**	Controls are in place but are likely insufficient to reduce risk consequence and/or likelihood to an acceptable level. Review and remediation of controls is required.
5	**Completely ineffective or non-existent**	Few if any controls are in place. Urgent review and remediation of controls is required.

6.2 Appendix 2 – CERA risk assessment criteria *continued*

Likelihood Rating Criteria

	Likelihood category	Estimated average recurrence interval	Description
1	**Very Rare**	>1,000 years	No recorded events or any indicative evidence No recent events in comparable jurisdictions Minuscule opportunity, reason or means to occur
2	**Rare**	101 – 1,000 years	Few recorded events or little indicative evidence Some similar events in comparable jurisdictions Little opportunity, reason or means to occur
3	**Unlikely**	11 - 100 years	Some recorded events Some events in comparable jurisdictions Some opportunity, reason, or means to occur
4	**Possible / Likely**	1 - 10 years	Many recorded events Some events in comparable jurisdictions Great opportunity, reason, or means to occur
5	**Almost Certain**	More than once a year	Expected to occur in most circumstances; with strong anecdotal evidence and history of recorded incidents

6.3 Appendix 3 - Wimmera Emergency Management Resources Sharing Program (WEMRSP) risk assessment data

Within the Mid West Region, there are four municipalities that work collaboratively in a partnership and are known as the Wimmera Emergency Management Resources Sharing Program (WEMRSP). These are:

- Hindmarsh Shire Council
- Horsham Rural City Council
- West Wimmera Shire Council
- Yarriambiack Shire Council.

From this program, there is a group called the Wimmera Emergency Management Team (WEMT) who support the WEMRSP and the Councils in partnership (including performing the municipality risk assessments).

The following is the output of the *ISO 31000* compliant risk assessment that the WEMT performed; all risks were rated as High.

	Hindmarsh	Horsham	West Wimmera	Yarriambiack
Bushfire	H	H	H	H
Drought	H	H	H	H
Extreme Temperature - Heatwave	H	H	H	H
Falls		H		
Farm Accidents			H	
Fire Residential	H	H		H
Flood	H	H	H	H
Food and Water supply contamination			H	
Hazardous Material - release in transport		H	H	
Insect pest incursion			H	
Personal Assault		H		
Service Disruption - Electricity	H	H	H	H
Storm	H		H	
Suicide			H	
Transport Accident - Large		H		
Transport Accident - Road		H		
Transport Accident - Road Private			H	H
Transport Accident - Train/Rail	H			

Table 8: *WEMRSP CERA data (tabular)*

6.4 Appendix 4 – East Region risk assessment data using early CERA tool

East Region was one of the early adopters of CERA; the risk assessments for East Gippsland and Latrobe were collated in an older version of the CERA tool during the pilot, so the data for these municipalities is not comparable to those conducted using the current CERA tool and is therefore presented separately.

The following table depicts the results of the CERA assessments for East Gippsland and Latrobe, and the data has been categorised into the hazard groupings detailed in **Appendix 1**.

	East Gippsland	Latrobe
Animal or plant disease		
Biological incident		
Bushfire - large	H	H
Bushfire - small	M	H
Fire - other		M
Flood - riverine	M	M
Hazardous materials		H
Heatwave	M	
Human caused	M	
Human epidemic / pandemic	M	H
Natural disasters	M	M
Storm	M	M
Structure failure		
Traffic accident	M	
Utility outage	H	

E = Extreme	H = High	M = Medium	L = Low	N = Negligible	No CERA data	CERA incomplete

Table 9: *East region early CERA data (tabular)*

ses.vic.gov.au