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Submission: Please find the submission for the City of Greater Bendigo attached
Submission - City of Greater Bendigo - Inquiry into Climate Resilience.pdf

Infrastructure resilience and built environment: 4

Land Use Planning: 9

Conduct Climate Risk Assessment: 10

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Energy Transition: 1

Parliament of Victoria
Inquiry into Climate Resilience

Submission by Greater Bendigo City Council

Endorsed by Council on 24 June 2024

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Introduction

The Greater Bendigo City Council (Council) is pleased to provide a submission to the Legislative Council's Environment and Planning Committee Inquiry Into Climate Resilience. Council welcome's the chance to respond, as we are already seeing the impacts of climate change. As a local government authority, we are often at the forefront of recovery and disaster planning and play a key role in supporting community climate resilience.

This submission was endorsed by the Greater Bendigo City Council at the Council Meeting on 24 June 2024.

The key messages outlined in the submission are as follows:

1. **Risks facing the built environment and infrastructure -** Council managed road, drainage and tree assets are particularly at risk from flooding, drought and extreme heat. The municipality's built environment more broadly (e.g. homes and commercial and industrial buildings) are at risk from all climate change related hazards. The risks facing the City's infrastructure and built environment impact on our community in many ways, including through potential disruption to transport routes and community services. Community health and wellbeing is also impacted from living and working in buildings that are not resilient to extreme temperatures or which are at risk from flooding, storms and bushfires.

2. **Reconstruction funding does not enable 'betterment' -** The current criteria for reconstruction funding is a barrier to achieving climate resilient public assets and infrastructure. Reconstruction funding is complex and resource intensive to administer and currently does not fund 'betterment'. In response the Victorian Government could seek to establish a Victorian Betterment Fund, similar to the Queensland Betterment Fund, to help overcome some of the above-mentioned reconstruction challenges.

3. **Resource constraints limits Council's capacity to retrofit infrastructure for resilience** - The financial constraints faced by Council limits our capacity to take a proactive approach to retrofitting assets for climate resilience. This is particularly evident in relation to drainage where Council often struggles to upgrade infrastructure to the new, climate informed design standards due to our limited renewal budget. These financial constraints limit the capacity for Council to implement proactive upgrades, instead resulting in upgrades only occurring after an asset fails.

4. **Insurance costs are increasing while coverage is decreasing** - Council's insurance premiums continue to increase as a result of the organisation's increased

natural disaster related claims. In addition, Council's insurer has reduced coverage for local governments who have made flood claims in the past 12 months.

5. **Centralising flood modelling would expedite the introduction or review of flooding overlays to ensure they reflect new climate informed modelling -** Greater support is required for rural and regional councils and / or catchment management authorities to conduct or update their flood modelling. While Melbourne Water completes the bulk of flood studies in metropolitan Melbourne, this responsibility sits with local government or catchment management authorities in rural and regional areas who are often subject to significant resource constraints. Centralising flood studies and the associated planning scheme amendments (as occurred when Bushfire Management Overlays were updated) may be a more efficient way to ensuring planning provisions across the state reflect current climate change informed flood modelling.

6. **Most homes require investment in retrofitting to be climate resilient -** Retrofitting housing stock to be more resilient needs to be a priority for state and federal governments. Most homes in the City are poorly sealed and insulated, exposing residents to extreme heat and cold. In addition, many homes were constructed before current climate change adjusted flood and bushfire modelling and, therefore, are not built to withstand these hazards. A state-wide retrofitting program would help enhance the resilience of existing homes to climate risks such as extreme heat, flooding and bushfire while improving energy efficiency and reducing utility costs to the community. This could be in the form of loans, grants, rebates and / or direct program delivery. Introducing minimum standards for rental properties and prior to sale could also help enhance resilience in the built environment.

7. **Integrated recovery and resilience programs would help build climate resilience in the community** - Currently most climate adaptation and community recovery programs and funding relate to single incidents or specific climate hazards such as bushfires, flooding, drought or heat waves. This makes it difficult for councils to work with communities to build resilience to all climate change related hazards which may affect their township or locality. Integrated community recovery and climate resilience funding and programs would enable councils to take a holistic approach to working with our communities. For example, programs dedicated to delivering local community climate vulnerability assessments and action plans could help accelerate work many local governments and agencies are keen to undertake.

8. **Climate change is impacting the natural environment and biodiversity** - The rapidly heating climate will result in greater disease and death of native animals, reduced capacity for plant establishment and survival and increased bushfire risk, putting our natural environments under huge stress. Mitigating these impacts will require continued implementation and enforcement of environmental legislation,

increased investment in works that protect and enhance existing remnant native vegetation on public and private land, investment in revegetation that enhances connectivity and protection of natural assets through emergency management planning and response processes.

Background

About the City of Greater Bendigo

The City of Greater Bendigo is in the centre of Victoria, covering almost 3,000 km2. Greater Bendigo has the third largest urban area in Victoria. It also includes many small towns and villages such as Heathcote, Axedale, Huntly, Marong, Elmore, Goornong, Kamarooka, Lockwood, Neilborough, Sebastian, Woodvale, Raywood, Mia Mia and Redesdale. The municipality's population is approximately 122,500 and is growing quickly.

Bendigo is known as the 'City in the forest' due to the state and national parks which surround the urban area. Large areas of bushland also extend through the municipality's rural areas which contain rural living and bush blocks. This increases the bushfire risk for the municipality's rural community, including residents in small towns such as Heathcote.

Most of urban Bendigo drains to Bendigo Creek which bisects the City. This creek along with other tributaries and waterways are prone to flooding due to the topography of the municipality and the history of mining and disturbance which has reduced the capacity of the landscape to absorb water.

History of natural disasters in the City

In recent years the City of Greater Bendigo has experienced an increase in the number of natural disasters. In addition, Council has increasing played a regional support role by providing assistance to our neighbouring local governments. A summary of recent events is provided below.

Black Saturday fires

The City was impacted by the 2009 Black Saturday fires mainly in Redesdale (9,445 hectares burnt) and Eaglehawk (594 hectares burnt). On this day fire spread to within 1.2km of the City Centre. During those fires one life was lost, 57 houses were destroyed and significant other damage occurred.

2022 floods

The City was impacted by the 2022 flood event. In this incident the region received over 150mm rainfall over 48 hours which led to flash flooding around urban areas and major flooding of the Campaspe River. Lake Eppalock experienced the largest flow over the spillway on record. Numerous creeks also reached their highest recorded levels resulting in overland flooding.

Council, as a part of the Northern Victorian Emergency Management Cluster, provided assistance to its neighbouring councils during these floods. The assistance included establishing and operating the largest relief centre since Black Saturday. The relief centre provided temporary relief and accommodation services to over 270 people from across the Cluster area (with largest numbers being from Rochester).

The financial implications for Council were substantial. It is estimated that the total damage cost was $3.3M, $650,000 of which fell to Council after reimbursements. These costs included:

- Repairs and reconstruction of essential public assets (infrastructure assets).
- Repairs to other damaged assets.
- Operation and staffing for the Bendigo Emergency Relief Centre.
- Costs relating to waste disposal and transportation.
- Building insurance excess for claims lodged.
- Internal staffing and use of plant and equipment to support repairs and recovery.

It is likely that other additional costs were incurred across the organisation as a result of this event but did not fit the eligibility criteria for reimbursement or were not captured in a way that could be easily reported.

2023 and 2024 floods

The City experienced the following flood and weather events from Christmas Day 2023 through to February 2024:

- 25 December 2023 Boxing Day rain event
- 2 & 3 January 2024 storm / hail event
- 7 & 8 January 2024 main rain/flood event
- 13 & 14 February 2024 storm event

In many cases people were affected by flooding twice in 15 months.

Emergency services received 4,668 requests for assistance during the period of 2 January to 20 January alone. During the Secondary Impact Assessment (SIA) process, 113 homes in the municipality were recorded to have experienced above floor inundation.

The impact of these events on the built environment and infrastructure was substantial. In addition, the event placed a significant burden on Council staff resourcing, both during the response and the recovery process.

Early estimates from the January storms and flooding indicate that these events caused between $15M and $25M of damage to Council managed infrastructure. Council has engaged a consultant to capture asset defect data and prepare damage claims for the early stages of this event.

There were many lessons learned from the October 2022 in terms of uplifting resourcing when such events occur, some of which Council applied in response to this event.

In February 2024, the City was impacted by a storm/hail event which did not result in significant infrastructure damage, but which did result in a number of fallen trees which required clearing with the use of internal staff, plant and external contractors. At this stage, the cost estimate of this event is approximately $100,000.

The concurrent events and the long tail of recovery have meant Council is responding to new events whilst still actively recovering from previous events.

Whilst the abovementioned events were considered emergencies, slow onset climate impacts such as drought, increased heat and lower rainfall will also impact on our built environment and infrastructure in the future.

Due to its proximity and connection to the local community, local government has a unique perspective on what is needed to build resilience for infrastructure and within the community.

Responding to Terms of Reference

(a) the main risks facing Victoria's built environment and infrastructure from climate change and the impact these will have on the people of Victoria;

Council completed a Climate Change Risk Assessment of the organisation's operations focusing on the risk to assets, service delivery and staff in 2022/23. The process for undertaking the assessment was informed by other local governments and overseen by an external consultant.

The risk assessment provides Council with an understanding of the risks to infrastructure and assets in the municipality. The risk assessment considered the climate risks in 2030 and 2050 under a high emissions scenario (RCP 8.5) that is consistent with the current emission trend.

The assessment determined that:

- Council managed **roads** are particularly vulnerable to flooding and extreme heat.

- Council managed **drainage assets** are particularly vulnerable to flooding.
- Council managed **buildings** are vulnerable to all climate hazards, particularly bushfire, storms and flooding. In addition, many Council buildings are not able to be used during extreme heat and heat waves due to their poor thermal performance.
- **Trees and open spaces** are vulnerable to drought, extreme heat, and storms.

Additionally, the added clean up and maintenance during an event can be resource intensive and delay maintenance and renewal programs.

When Council managed infrastructure and assets are impacted by climate related hazards, these impacts flow through to the community in many ways. These include private property flooding (when drainage assets fail), reduced or interrupted services, lack of community spaces for meetings and recreation and isolation due to road closures.

Whilst Bendigo has completed a risk assessment, this is only the first step to becoming resilient. Funding and resourcing is required to mitigate these risks.

In addition, guidance and support with undertaking local government climate risk and vulnerability assessments would help standardise the process while enabling these assessments to be completed by smaller councils with less resources.

Recommendations

- That the Victorian Government provide guidance and support for local government climate change risk and vulnerability assessments.
- That the Victorian Government consider funding and support mechanisms to assist local government implement measures that reduce climate related risks to infrastructure and assets.

(b) how the Victorian Government is preparing for and mitigating the impacts of climate change on our built environment and infrastructure.

No response provided.

(c) the barriers facing Victoria in upgrading infrastructure to become more resilient to the impacts of climate change, including barriers in rebuilding or retrofitting infrastructure, including but not limited to, issues relating to insurance and barriers faced by local government.

Council has experienced a number of barriers to upgrading and bettering assets, many of which are due to state and federal government funding criteria.

These barriers can be summarised as follows:

- Current **funding criteria** that only allows for like for like rebuilds after an event.
- **Resource constraints** which limit Council's capacity to undertake proactive maintenance and upgrading of infrastructure in response to climate change.
- The changes to local government **insurance** in recent years due to multiple flooding events.

Further detail about these barriers is outlined below.

Current funding criteria and processes

Council recently applied for funding from various streams after the 2022 flood events. The main funding stream was the Commonwealth Government Natural Disaster Relief and Recovery Arrangements (NDRRA), also referred to as the Disaster Recovery Funding Arrangements (DRFA). This stream brought the following challenges and barriers:

- **Resource intensive process -** Council found the claims process to be complex and resource intensive. While the introduction of day labour costs (use of Council's in-house resources to undertake allowable repair and restoration works after eligible events) and internal plant use was welcomed, a standard fixed rate adopted would be better than each council needing to produce a calculation and justification for internal plant hire rates.

- **Lack of support -** The process for claiming was not clear or straight-forward and the roll out of the new claims platform was not supported at a level needed in order to utilise the system to its fullest potential. This, coupled with our assessor being relatively new at the time, meant we lacked authoritative advice and support at each stage of the process.

- **Administrative burden** -The process requires meticulous record keeping of expenditure for works clamed as well as collation and submission of detailed information about asset conditions and specifications for works completed. This places a significant burden on Council and Council suppliers.

- **Lack of betterment funding** - Under the current model in Victoria, funds are provided to councils to reinstate the infrastructure to their pre-disaster condition. If a council wants to improve the infrastructure it must cover the gap in funding between the 'like for like' outcome and the climate resilient standard. This is further complicated by the requirement to provide extensive evidence as to the pre-event condition of an asset, even where the consequential damage to the asset is clearly linked to disaster events.

Due to a lack of betterment funding and emerging interpretation of the DRFA guidelines to only provide restoration funding based upon a pro-rata value determined by written down asset value, councils could be left to fund up to 75% of reconstruction costs which places significant strain on Council's budget. An example of this would be gravel road re-sheets which are funded at 50-75mm, however, practically many councils will re-sheet to the standard depth of 100mm. The cost of gravel re-sheeting for one flood impacted council in our Northern Victorian Emergency Management Cluster will be more than $10 million. Full funding for restoration costs to contemporary design and service levels standards is therefore imperative to ensure that assets are returned to a fully functional and serviceable state without imposing unreasonable or impractical financial and delivery burdens of councils.

Further, the strict interpretation of allowable works means that councils have to make choices between funding betterment or undertaking works in a highly inefficient manner. For example, current funding would cover rectification of isolated defects such as scours on gravel roads due to flooding but would not cover grading of the rest of the road as it would be considered betterment. This results in the inefficient use of both state and local government resources or excessive delays in completing flood restoration works, i.e. delaying works to when peripheral renewal works may be scheduled which may prove challenging in the context of community expectations as well as complying with the 2 year timeframe to lodge eligible DRFA claims.

A local example of incurred betterment costs for Council is Spillway Road, Eppalock which was impacted by the 2011 floods and again by the October 2022 floods. Approximately 150 metres of the road was severely compromised/undermined requiring closure of the road to through traffic. Council applied through DRFA to renew the road, however experience demonstrated that the road was susceptible to future flood damage if reconstructed to the same standard as applied after 2011 (like for like). As a result, Council is electing to cover the additional $340,000 cost above and beyond like for like reinstatement, to upgrade the road to a higher standard to reduce the risk of flood damage in the future. Such investment will in effect reduce the likelihood or extent of future DRFA claims, however is having to be funded by Council.

Council appreciates the additional funding allocated through the Council Flood Support Fund which is intended to support councils with reinstatement and recovery works not eligible under the DRFA funding program. This additional funding is invaluable, however, it is only able to be applied to "minor repairs" and is a small amount in the context of the betterment or reinstatement and recovery work needed (Council's allocation after the 2024 floods and storms is $500,000 which would largely be consumed by the betterment costs for Spillway Road only).

Resources for proactive maintenance and renewal of assets

The City is responsible for building, maintaining and upgrading the drainage network across the municipality. The Australian Standard for drainage design changed to incorporate consideration of climate change. This change has increased the design standards for stormwater networks and infrastructure.

However, the renewal expenditure for local government is not tied to changes in standards and therefore the cost to repair assets has increased. In the current rate capping environment it is challenging to continue to deliver a renewal program to the higher standards without financial support.

Additionally, the scope of work needed to take a holistic approach to upgrading the entire drainage network would require considerable resources for local government to investigate. Therefore, the only viable approach for Council is to upgrade assets as they fail.

Insurance

Council has engaged its insurer for flood related damage in recent years. As a result, costs have continued to increase year on year. As an example, Council's property contribution increased by 25% from 2020/21 to 2023/24. At the same time Council's ability to claim for flood damages reduced from $20M to $2M.

There has also been an increase in members of the public pursuing claims against Council where they believe the organisation is liable for flooding to their property rather than lodging a claim with their insurer.

In addition, Council has encountered issues with several sites where the 2022 damage was still being addressed and then further damage has occurred with the recent 2024 storms. With increasing and clustered weather events due to climate change this is likely to become more common.

Recommendations

- The current criteria for DFRA funding for rebuilding infrastructure after an event should include the betterment of assets to become more resilient to climate change. Alternatively, the Victorian Government should establish a Victorian Betterment Fund, similar in purpose and operation to the Queensland Betterment Fund.
- The Victorian Government should investigate opportunities to support local governments to undertake proactive maintenance and upgrades to assets as standards change to account for climate change.

(d) the adequacy of the current Victorian planning system as it relates to its adaptation to, preparation for, and mitigation of climate change impacts.

Council would like to congratulate the Victorian Government on the update to the *Planning and Environment Act 1987* to include climate change in its purpose. This will help ensure the design and implementation of planning provisions considers the impacts of climate change.

The Council Alliance for a Sustainable Built Environment has provided a submission to the Inquiry that provides further recommendations for how the Victorian planning system could better account for climate change impacts. Greater Bendigo City Council supports the CASBE submission.

(e) what more could be done to better prepare Victoria's built environment and infrastructure, and therefore the community, for future climate disaster events; and

This submission contains a number of recommendations for better preparing Victoria's built environment. Three additional recommendations that are not covered under the other terms of reference are as follows:

Flood studies and overlays

The responsibility of flood modelling is inconsistent across Victoria with responsibilities split between councils and catchment management authorities, especially in rural and regional areas. Additionally, flood studies are complex to prepare and require resources and extensive engagement. In regional areas such as Greater Bendigo, preparation and implementation of flood studies relies on Council resourcing or successful applications for funding by the North Central Catchment Management Authority to the Victorian Government.

Due to these constraints, Council in collaboration with the North Central Catchment Management Authority has focused on studies in areas of the municipality at the greatest risk of flood impact, mainly Bendigo and Heathcote. For a completed list of the flood studies Council has completed in the past ten years please see **Appendix 2.** These studies have led to updated planning controls (i.e. planning overlays) and identified potential flood mitigation interventions for further investigation and/or delivery.

Resource constraints have meant that implementation of some flood studies completed in 2019, 2020 and 2022 are still pending. This limits the capacity of residents to make informed decisions about their homes and it impacts the Council's capacity to ensure newly built or renovated homes are built to minimize flood risk.

The 2022 and 2024 events also highlighted some of the gaps in the City's flood studies and / or flood related planning provisions. As a result, Council has applied to the Australian Government Disaster Ready Fund to complete a Goornong Flood Study given the repeated flooding events in this locality and the lack of community awareness about this risk to homes and properties.

While Melbourne Water completes the bulk of flood studies in metropolitan Melbourne, this responsibility sits with local government or catchment management authorities in rural and regional areas, even though rural councils and catchment management authorities generally experience greater resource constraints. Centralising flood studies and the associated planning scheme amendments (as occurred when Bushfire Management Overlays were updated) may be a more efficient and equitable way to ensuring planning provisions across the state reflect current climate change informed flood modelling.

Retrofitting homes

While the planning and building regulatory system can help enhance the energy efficiency and climate resilience of new homes, retrofitting existing homes also needs to be addressed.

Vulnerable Australians especially are experiencing acute financial, health and social disadvantage due to the high energy prices, poor energy performing homes and inadequate income support payment[1]. Lack of energy efficient homes are cited as the primary factor in deaths associated with heat waves, which are the deadliest of all other extreme weather events combined[2].

Approximately 50% of Greater Bendigo homes were built before 1990. A Sustainability Victoria study found that homes of this era generally perform in accordance with a 1.6 star energy rating[3]. The same Sustainability Victoria study found that homes built between 1990 and 2004 (20% of Bendigo's housing stock) are likely to perform in accordance with a 3.1 star energy rating. These homes are vulnerable to both extreme heat and cold and are expensive for residents to run.

Sustainability Victoria's Victorian Healthy Homes Program retrofitted the homes of 1,000 low-income households over three years, reporting that work costing on average less

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[1] Australian Council of Social Service, 'Energy and Cost of Living Snapshot', Australian Council of Social Services (2023) https://www.acoss.org.au/wp-content/uploads/2023/10/ACOSS-Energy-Cost-of-Living-Snapshot-October-2023.pdf

[2] Australian Council of Social Service, 'Energy and Cost of Living Snapshot', (2023)

[3] Sustainability Victoria, 'Energy Efficiency Upgrade Potential of Existing Victorian Houses (2015), https://www.sustainability.vic.gov.au/research-data-and-insights/research/research-reports/household-retrofit-trials

than $3,000 per home resulted in meaningful increases in comfort and health for residents[4].

Given when they were built, most homes in Sustainability Victoria's pilot project are at risk from flooding and bushfires which has a flow on affect to insurance premiums and coverage. This is an issue for Greater Bendigo but also statewide.

A state or national retrofitting program would help enhance the resilience of existing homes to climate risks such as extreme heat, flooding and bushfire while improving energy efficiency and reducing utility costs to the community.

For disaster resilience, simple initiatives such as raising electrical switchboards, installing flood resistant floor coverings and permeable fencing can help reduce damage from flood events in established neighbourhoods and townships with housing stock built before contemporary flood mitigation standards. Similarly, support for installation of fire retardant plantings and external sprinkler systems can help reduce the risk of property damage in fire prone areas.

Funding for a retrofitting program could take the form of low or no interest loans, grants, rebates or, for low wealth homes, direct service delivery at no cost.

A state or nation-wide program could build on existing work including the Retrofitting for Resilience resources prepared by the Castlemaine Institute. The workbook helps to identify the type of housing stock, the vulnerability of the housing stock aligned to the climate impacts of the region and suggest upgrades and retrofitting options to increase resilience.

Greater Bendigo City Council through the Greater Bendigo Climate Collaboration is also currently conducting a feasibility assessment to determine how a local retrofitting program could be delivered that targets low wealth homes.

In addition, introduction of minimum standards for rental properties and prior to sale would also help enhance the resilience of existing homes over time.

Recommendations

- Centralising flood studies and the associated planning scheme amendments across the state to reflect current climate change informed flood modelling.
- Review existing flood modelling to include the latest climate projections.
- Invest in a state-wide retrofitting program, that targets low-income and low energy star homes.

[4] Castlemaine Institute, 'Retrofitting for Resilience' (2024) Retrofitting for Resilience, https://www.cvga.org.au/uploads/9/8/3/8/9838558/ci-rpt-retrofitting_for_resilience-230918-final.pdf

- Introduce minimum energy efficiency and climate resilience standards for rental properties and potentially prior to sale.

(f) whether further inquiries or investigation may be needed into other aspects of climate change adaptation and climate disaster preparedness in Victoria, noting that climate change will have far-reaching impacts on all aspects of Victorian life, including but not limited to biodiversity, human health, primary production, industry, emergency services and more, and that while these areas may overlap with the matters covered in this inquiry, they may also warrant further investigation in their own inquiries

Council believes further inquiries into the following would highlight the increasing role local government is playing in the resilience and disaster preparedness space and the require funding, resourcing and change of approach that is needed to increase the resilience of Victorian communities.

Moving away from single incident funding

Currently most climate adaptation and community recovery programs and funding relate to single incidents or specific climate hazards such as bushfires, flooding, drought or heat waves. This approach fails to recognise the new climate reality which is resulting in concurrent events. This makes it difficult for councils to work with communities to build long term resilience to all climate change related hazards which may affect their township or locality.

For example, Greater Bendigo City Council has been fortunate to receive funding through the Flood Recovery Hubs as well as through Safer Together and the Risk and Resilience Grants Program. Together these funds are critical to enabling Council to continue to work with flood affected and bushfire prone communities. However, the incident and hazard based nature of the funding creates a patchwork of resources which Council is currently working to coordinate into a coherent community recovery and resilience program that responds to the needs of local communities in a holistic manner.

Integrated community recovery and climate resilience funding and programs would enable councils to take a holistic approach to working with our communities. For example, programs dedicated to delivering local community climate vulnerability assessments and action plans could help accelerate work many local governments such as Greater Bendigo City Council are trying to progress with local communities.

Climate change impacts on biodiversity

The rapidly heating climate will result in greater disease and death of native animals, reduced capacity for plant establishment and survival and increased bushfire risk,

putting our natural environments under huge stress. Storm events and flooding are also predicted to increase, which will displace and kill many plants and animals and increase weed spread that will compete with native plants. Compositional change in communities will occur (e.g., loss or re-ordering of species and interactions), particularly in ecosystems already reduced in area or under stress.

While almost all species will be affected in some way, there is particular concern for species inhabiting Greater Bendigo that are already listed under federal legislation as threatened with extinction. These include Swift Parrot, Regent Honeyeater, Eltham Copper Butterfly, Spiny Rice Flower and the Grey-Box Grassy Woodland and Derived Native Grassland communities of South East Australia. The biggest threat to these are drought, bushfire, flood and pathogens that could cause extinction with one or few major events.

Mitigating climate impacts to the natural environment will require continued implementation and enforcement of legislation and regulations that protects remnant native vegetation and other environmental assets from removal or damage, increased state government investment in restoration works in existing state government managed conservation reserves which act as a refuges for flora and fauna, as well as support for revegetation across the landscape to support improved connectivity. Supporting private land holders to protect, enhance and connect native vegetation on their properties will also be key. This could include supporting landholders to apply Trust for Nature covenants on parts of their properties.

Opportunity also exists to consider how natural assets such as conservation reserves can be protected as a part of emergency management planning and response processes. Not only are conservation reserves important for biodiversity, they are also valued by the community and can play an important role in facilitating recovery after disasters.

Recommendations

- Continue to implement and enforce legislation aimed at protecting remnant native vegetation and other environmental assets from removal or damage.
- Increase investment in restoration works to state government managed parks and reserves which act as refuges for native flora and fauna.
- Increase support for private landholders to protect, enhance and connect areas of remnant native vegetation on their properties, including through increased support for Trust for Nature.
- Consider opportunities to integrate protection of natural assets into emergency management planning and response processes.

Appendix 1: Detail of 2024 storm impacts

Date	Event	Impact
25 – 26 December	Rain event	• 80 mm of rain in a 48 hour period • Minor flooding of creek systems
2 – 3 January	Storm event	• 30 mm of rain recorded at the Bendigo Airport – other areas reported more • Localised thunderstorms cells were centred around Huntly/Epsom area resulting in damaging rain and hail (size of golf balls and bigger). • The hail caused damaged to cars, roofs, skylights and blocked drains and guttering, resulting in dwelling inundation.
7 – 8 January	Rain event	• Over 90 mm of rain recorded at the Bendigo Airport • Isolated cells of rain saw scattered impacted areas throughout the City, Key areas being Goornong, Bagshot, Huntly, Heathcote and Redesdale • There was also a cluster in White Hills, and dwellings impacted in the Junortoun, Axedale and Strathfieldsaye areas • As a result of the rain, the ERC was activated at 3am Monday 8 January – open for 24 hours • 480 SIA's were completed across the Municipality resulting in: • Approx. 113 dwellings with above floor inundation reported. • Approx. 44 significant under floor inundation • Approx. 88 Properties who lost fencing and contacted the City were passed on to BlazeAid for assistance
13 – 14 February	Storm event	• Customer Support experienced a larger than usual influx in calls to the City over these two days, with a significant amount regarding trees due to the storm (inspections, removal, fallen or hanging limbs). • The SES also received a significant amount of requests for assistance (RFA), 328, during the two

Date	Event	Impact
		days with an estimate of 99% of those relating to storm damage. • Areas for assistance within the Municipality were quite dispersed with the majority in Junortoun, Kangaroo Flat, Lockwood, Spring Gully, Heathcote/Toolleen areas • At the peak of the storm approximately 30 – 40 roads were closed, this is an approximate as many locations were isolated due to roads being blocked and many not reported, particularly in the Heathcote area where the power was out and phones where down.

CITY OF GREATER BENDIGO

Appendix 2: Completed flood studies - past 10 years

Year	Study Title	Subsequent mitigation action focus
2013	Bendigo Urban Flood Study	• Investigate use of Crusoe Reservoir as capture and detention basin • Further investigate various targeted levee bank construction sites • Further investigate retention of Bendigo Creek levee bank • Consider implementing Total Flood Warning System
2016	Heathcote Flood Study	• Declare designated flood levels and implementation of appropriate Planning Scheme and building controls • Implement of a Total Flood Warning System • Develop a flood response plan • Disseminate flood intelligence and consequence Information
2018	Marong Flood Study	• Update planning scheme overlays to reflect 1% AEP flood extents determined by study
2019	Epsom, Ascot and Huntly Flood Study	• Design and construct a levee bank along Racecourse Creek – Racecourse to Howard Street • Bendigo Creek levee improvements ***Implementation of planning controls to be completed*
2020	Kangaroo Flat and Golden Square Flood Study	• Reinstate the upstream Crusoe Reservoir catch drain system • Symonds Street pipe upgrades • Levee bank construction near Alder Street and Bank Street ***Implementation of planning controls to be completed*
2020	Heathcote Flood Mitigation Study	• Vegetation clearing upstream and downstream within Possum Gully and Caledonian Gully – High Street Intersections

Year	Study Title	Subsequent mitigation action focus
		• Construct new Golden Gully retention basin • Pipe upgrades at Barrack Street – High Street Intersection • Feasibility investigation for Dead Horse Gully protection measures
2022	Central Bendigo Flood Study	• Isolated increase in creek waterway area at various structures/bridges • Levee construction along Back creek downstream of McIvor Road ***Implementation of planning controls to be completed*
2022	Sandy Creek Flood Study, Bagshot	• Informed development planning and investigate additional planning controls