



Yarra Ranges **Council**

State of the Climate and Environment

Prepared for the Climate and Environment Strategy



Document prepared for the Climate and
Environment Strategy March 2026



Acknowledgement of Country

Yarra Ranges Council acknowledges the Wurundjeri and other Kulin Nation peoples as the Traditional Owners and Custodians of these lands and waterways. We pay our respects to all Elders, past, present, and emerging, who have been, and always will be, integral to the story of our region. We proudly share custodianship to care for Country together.

About this Report

This report provides a snapshot of climate and environment information for Yarra Ranges. Council is committed to protecting and enhancing the valued natural environment for today's community and future generations. Understanding our local climate and environment helps us plan for a safer, healthier and more resilient Yarra Ranges.

Our climate is shaped by both natural factors such as changes in the sun and volcanic eruptions and by human activities – energy use, farming and transport – which release gases that trap heat and make the earth warmer.

Key Messages

A healthy natural environment is essential for community wellbeing

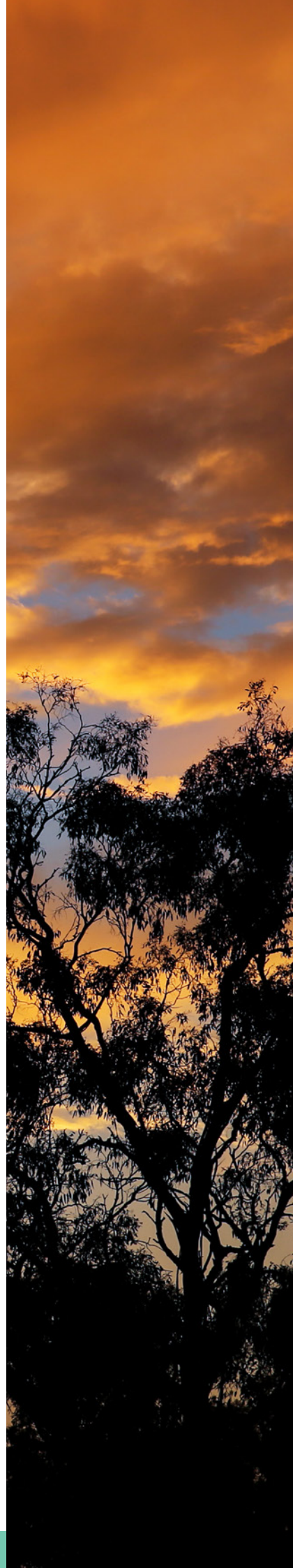
- The climate and environment influences daily life, outdoor activity, health, local economies including agriculture and tourism and more.
- Yarra Ranges has some of Victoria's most significant forests, waterways and biodiversity, supplying over half of Melbourne's drinking water and providing clean air, cooling and habitats for animals and plants.

The changing climate is already affecting Yarra Ranges

- Hotter days, more extreme weather and shifting rainfall patterns are already affecting the community. Increased risks such as bushfire, storms, flooding and habitat loss.
- An increase of hot days will result in cancelled outdoor events, earlier fire-readiness, health impacts and higher cooling bills. More fires will result in more smoke-affected days.
- Short, heavy downpours are more common, causing flash flooding, culvert surges, and slope failures.
- Snow fall in areas such as Mount Donna Buang to be less than in past years affecting alpine animals and plants, and reducing snow 'play' access.
- Forests show increasing stress from heat, wind and fire.
- Yarra Ranges is among the most disaster-affected LGAs in Australia, with 42 federal disaster-recovery activations since 2006, reflecting compounding storms, floods and fire weather.

Working together

Council, land managers and communities are working together to build resilience, manage invasive species, improve water quality and respond to more frequent severe weather. Local action now will help reduce risks to homes and infrastructure and support healthier forests and waterways.



What is Climate Change?

Climate and Weather

Climate is the average weather conditions of a place for a long period of time, while weather is the atmospheric conditions (hot day, rain, cool conditions) for a brief period of time. Across Australia, there are six broad climate zones. Yarra Ranges is in the Temperate Zone characterised by moderate temperatures, distinct seasons and reliable rainfall. ¹

Climate Change

Long-term temperature records show the planet is warming, with global temperatures already about 1.1°C higher than in pre-industrial times. That small-sounding number represents a huge amount of extra heat and energy in the climate system, and we're already seeing the effects: more extreme heatwaves, longer fire seasons and severe droughts. Communities are already seeing the impact on people's health, homes, and livelihoods.

Global efforts to limit warming to 1.5°C are critical if we're to minimise the impact on our planet. A small increase in global temperature can result in irreversible damage such as the world's coral reefs dying; with impacts rising sharply as warming approaches 2°C. For decades scientists have stated that burning fossil fuels is a main contributor to rising temperatures, however, the pace is now faster. The quicker we reduce our reliance on fossil fuels for energy, the more we limit future damage. The choices made today will shape the conditions we all live with tomorrow. ²

Global Snapshot

Climate Condition³

Temperatures

Global temperature has already warmed by 1.1–1.2°C since the 1800s, and recent years have been the hottest ever recorded.

Extreme events

Heatwaves, heavy rainfall, droughts, and severe storms are occurring more often and with greater intensity as the planet warms; each additional 0.5°C of warming amplifies these hazards.

Rainfall and hydrological change

Intense short-duration downpours are becoming more intense in many places, while other regions are getting drier. Sea level rise is accelerating as oceans warm and ice-sheets melt, locking in long-term inundation risk for many low-lying countries like those in the Pacific.

Earth system signals

Greenhouse gases (such as carbon dioxide) are trapping more heat in the air and oceans, causing sea level rise and increasing extreme weather events.

Risk profile

Extreme heat, fire weather, heavy rain and storms can now happen at the same time, which can make it difficult for people, animals, and nature to cope.



Temperatures are 1.1°C higher than pre-industrial times. 2024 was the first calendar year above 1.5°C

Average sea level increased by +22 cm since 1900

CLIMATE TRENDS

Top four risks to the global economy in next 10 years are extreme weather, biodiversity loss, change to earth systems and natural resource scarcity

National

Australia has warmed by 1.51 ± 0.23°C since 1910

Sea surface temperatures around Australia have risen ~1.08°C since 1900



Victoria

Temperature increase of just over 1.0°C since 1910

Decrease in average rainfall, increase in short intense rainfall

Fire danger period starting earlier (spring)

Twice as many days over 35°C

Average temperature increase of 2.7°C

Annual rainfall to decrease by as much as 19mm

Longer fire season and 42% more very high fire danger days

Greater Melbourne & Yarra Ranges by 2050



Environment Condition⁴

Overall environmental trend

Globally environmental health is deteriorating, with climate change, pollution, and land clearing pushing ecosystems beyond their ability to recover.

Biodiversity

A high proportion of species are struggling to survive with their homes too hot, dry or polluted to continue sustaining life. Many ecosystems, such as coral reefs, forests, freshwater basins, are close to dangerous, irreversible damage.

Causes of decline

- Climate change (heat extremes, ocean warming and acidification*)
- Land use change and habitat loss
- Pests and weeds
- Pollution
- Using natural resources too quickly

Ecosystem changing rapidly

Ice sheets, glaciers, and sea ice are shrinking, oceans are heating up, and forests and rivers are being degraded faster than expected, with restoration to reverse damage predicted to take generations.

Human–nature interactions

More than 3 billion people live in places that are highly affected by climate change. When nature struggles, people struggle too, especially in communities that are already vulnerable.

*Acidification: When CO₂ dissolves in water it creates a weak acid. With increased CO₂ levels thanks to fossil fuels, that's a lot of acid in the ocean. The result could be a number of animals will no long be able to form calcium type shells.

Australia Wide Snapshot

Climate Condition⁵

Temperature

Australia has warmed by 1.51 ± 0.23 °C since 1910; extreme heat events are more frequent across all months.

Rainfall and streamflow

Cool season (Apr–Oct) rainfall has declined in the southeast since the mid-1990s, with stream flow decreases in southern Australia since 1970. Short duration heavy rainfall intensity is increasing.

Fire weather

Increase of dangerous fire weather days and longer fire seasons across large parts of the country since the 1950s.

Oceans and sea level

Sea surface temperatures around Australia have risen ~1.08 °C since 1900 with global mean sea level increasing by +22 cm since 1900 (acceleration since 1993). Oceans are acidifying and experiencing more frequent marine heatwaves.



Australia's
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National context

Deviation from 2000-2023 average



Example climate change impacts

Continued warming, more heat extremes, fewer cold extremes.

Likely further decrease in cool season rainfall across many regions of southern and eastern Australia, more time in drought.

Heavier short-duration rainfalls even where means decline, longer fire seasons, fewer but potentially more intense tropical cyclones, ongoing sea level rise.

Environment Condition⁶

The overall state of the Australian environment over recent years is poor and deteriorating with climate change compounding pressures from habitat loss, invasive species and pollution. The next national State of Environment Report is due December 2026.

Victorian Snapshot⁷

Victoria's environment is under increasing pressure with many climate-related indicators trending negatively and only one of 13 climate indicators (net greenhouse gas emissions) showing improvement.



Climate Condition

Temperatures

Victoria continues to warm, with annual average temperatures rising statewide and Melbourne nearing 1.5°C above pre-industrial levels; heatwaves and very hot days are becoming more frequent.

Rainfall and inundation

Rainfall remains below average in most years, while short-duration extreme rainfall events are intensifying. Cool-season drying is becoming more likely, even as inundation events increase.

Vegetation condition

Vegetation growth and productivity are influenced by climatic variability, with some areas showing above average growth following wetter La Niña periods, though long-term drying remains a concern.

Risk profile

Climate change is shifting Victoria's risk landscape with flood, heat, drought, bushfire weather, and sea-level rise risks are all increasing and interacting in more complex ways.

Environmental Condition

Overall environmental trend

Victoria's environmental condition is mixed but trending negative, with 60 of 139 indicators deteriorating, 34 stable, 33 improving and 44 unclear.

Biodiversity

Biodiversity continues to decline statewide. Of the 42 biodiversity indicators, 32 are deteriorating or unable to be assessed, reinforcing biodiversity decline as one of Victoria's largest and most persistent environmental challenges.

Drivers of decline

Major pressures include climate change, land-use intensification, invasive species, habitat fragmentation, and the impacts of the 2019–20 bushfires—which burned 1.5 million hectares, severely affecting species and ecosystems.

Yarra Ranges Snapshot⁸

Climate Condition

Temperatures

Melbourne has warmed markedly and heatwaves are becoming longer and hotter; heat events already drive big spikes in ambulance call-outs and deaths (e.g., 374 excess deaths in South Eastern Australia in the 2009 heatwave). In Yarra Ranges houses could remain hot into the evening, heat-stress for outdoor workers and wildlife and earlier fire-readiness.



Rainfall and inundation

Yarra Ranges is experiencing short, intense downpours despite long-term drying trends, bringing flash flooding, culvert surges and slope failures on saturated roads and tracks.

Vegetation condition

Forests face greater stress from heat, wind and fire weather which slows recovery in sensitive gullies and along ridgelines.

Risk profile

Yarra Ranges is one of the most disaster-affected LGAs in Australia. Since 2006, Yarra Ranges has recorded 42 federal disaster-recovery activations. This reflects compounding storms, floods and fire weather that leave little recovery time between events for residents, volunteers and Council.

Examples of climate change impacts on the Yarra Ranges area:

- Hot days affect daily routines: i.e. junior sport cancellations, tradespeople starting earlier to beat heat, higher cooling bills in homes.
- Flash flood/slope issues: 10–20 minute downpours overwhelm pits and grated inlets; local landslips close roads and walking tracks.
- Fire-readiness shifts: Residents prepare homes in November rather than January, more smoke day advisories even without a major bushfire, and lightning strike fires are more common.

Environment Condition

Water quality

Yarra Ranges supplies over half of Melbourne's drinking water; beginning in the 1880s when 100,000 hectares was secured as a protected, forested catchment.

Biodiversity

The area is currently home to 99 threatened fauna species under the Flora and Fauna Guarantee Act which includes lyrebirds, gliders, platypus and the Helmeted Honeyeater with hotter summers reducing cool-gully species sightings. Forests show sensitivity to heat, wind and fire.

Rainfall and inundation

Short burst storms increasingly cause mature eucalypts to fall whilst intense rainfall often erodes steep slopes and increases sediment loads in creeks. This reduces stream clarity and affects inflows to reservoirs that provide most of the city's drinking water.

Summary — what this means for people and environment of Yarra Ranges

People

- Expect more short, intense storms, flash flooding, and longer heat spells, with more outdoor events cancelled, higher cooling costs, and power outages during heatwaves.
- Longer lasting heatwaves with hotter nights causing discomfort for many community members and disruption to businesses.
- Fire seasons start earlier and run longer, smoke-affected days as a result of near or distant fires.

Place

- Short bursts of torrential rainfall causes trees to fall, landslips to occur and mud and sediment to be washed into creeks and water bodies..
- Snow fall in areas such as Mount Donna Buang to be less than in past years.
- Forests show increasing stress from heat, wind and fire.
- By 2050 (if no-action is taken) almost two in five homes in Yarra Ranges will be categorised as moderate-high climate risk (heat, fire, flood, storm) resulting in greater disruption and rising exposure to hazards.

Future Outlook

- Residents will rely more on individual resilience including; fire-preparedness, drainage upgrades and backup power/communications during storms and heatwaves.
- Roads, drains and public assets will need to withstand short burst heavy rainfall and longer fire seasons, shaping how Council plans maintenance and renewal.
- Forests and catchments will remain critical for cooling, buffering storms and protecting Melbourne's water supply, but will require ongoing restoration and protection to stay resilient under increasing climatic stress.

Glossary of Terms

Acidification	Dissolved CO ₂ makes water more acidic and can hamper or harm shell-forming marine life.
Hydrological	Relating to how water moves through the environment (rain, rivers, runoff).
Inundation	Water submerging land that is normally dry.
Fire weather	Weather conditions that increase the risk of fire starting or spreading.
Landslip/Slope Failure	When saturated or unstable ground gives way and slides downhill.
Greenhouse Gases, Emissions and Carbon Dioxide (CO ₂)	Gases like CO ₂ that trap heat in the atmosphere and warm the planet.
Biodiversity	The variety of living things and ecosystems in an area.

Heat extremes/ heatwaves	Periods of unusually high temperatures lasting several days.
Flash flooding	Sudden flooding from intense rainfall that drains too slowly.
Streamflow	The amount of water flowing through rivers and creeks.

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