

Climate

Our climate is getting hotter and drier, with substantial declines in spring rainfall and more extreme events, such as storms, heatwaves and firesⁱ. Changing rainfall patterns and intensified extreme weather events are putting nature, agriculture, public health and infrastructure at increasing riskⁱⁱ.

Communities and businesses also face substantial legal, financial and reputational risks if they don't understand, disclose and manage the physical risks of the changing climateⁱⁱⁱ. That's why the international community^{iv}, along with national^v, state and local governments^{vi}, financial institutions, insurers, industry bodies, businesses and individuals are all taking steps to manage climate risks.

If global temperatures exceed 2°C above pre-industrial levels, there will be dangerous and potentially irreversible impacts for all of us^{vii}. Current emission levels are tracking close to the highest scenario modelled by the Intergovernmental Panel on Climate Change (IPCC) and, without immediate large emissions reductions, global temperature rises of 3°C or 4°C by as early as 2060-70 are more likely^{viii}.

The most vulnerable sectors in the region are biodiversity, community health and wellbeing, and emergency management. The least vulnerable sectors are agriculture and tourism, which are considered to have a high capacity to adapt^{ix}.

The Hills and Fleurieu region has the advantage of being one of the coolest and wettest regions in South Australia, providing a higher baseline of resilience to the coming changes.

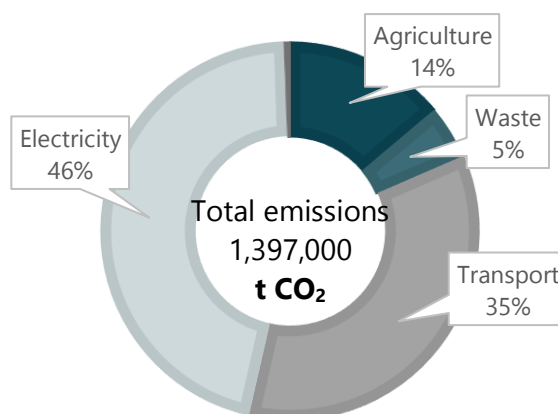
C1. Transition to net zero carbon emissions

There is a global push to keep temperatures less than 2°C above the pre-industrial baseline^x, by aiming for net zero emissions by 2050.

Global average temperatures are already more than 1°C above pre-industrial levels – they hit 1.2°C in 2020 – and it is likely they will temporarily exceed 1.5°C this decade^{xi}.

There are global standards^{xii} on how to estimate regional carbon footprints in a way that does not miss any emissions or count any twice. Our current understanding of our regional emissions profile (right) is based on these standards. More detail will be investigated to understand where our land-based carbon footprint is greatest.

HILLS AND FLEURIEU REGIONAL EMISSIONS PROFILE



Source: Adapted from Snapshot, 2020

Note: Excludes the part of City of Onkaparinga within the region

Challenges

The board has committed to understanding and reducing the carbon footprint of our own operations. The board's emissions have not yet been determined.

Work needs to be undertaken to:

- determine which carbon emitting activities are in-scope for the board and for land-based regional emissions;
- audit / quantify the emissions; and
- Determine opportunities and pathways for carbon reduction.

PIRSA is developing a state-wide Carbon Farming Roadmap, which will set out the direction for carbon farming across the state.

Read more about Carbon Farming opportunities in our [Land Snapshot](#).

About this document

This is a snapshot of what we know about the climate issues that are the focus of our [Hills and Fleurieu Landscape Plan 2021-2026](#). Follow the links for more detail.

To read the Landscape Plan or snapshots on land, water, nature and community, go to:

www.landscape.sa.gov.au/hf

Hills and Fleurieu trend & condition snapshot 2021

C2. Build the climate resilience of our ecosystems

There has already been a very significant loss of biodiversity, in our region and globally. This loss is predicted to accelerate, with climate change a significant contributor^{xiii}. However, nature plays a critical role in regulating the climate, so if our ecosystems are healthy, we can reduce the impacts of climate change in other areas^{xiv}.

The Mount Lofty Ranges is a biodiversity hotspot^{xv}, with diverse nature and landscapes. The variability of our landscapes means the climate will not change in the same way everywhere, and likewise, ecosystems will respond in different ways. How we support each

ecosystem or species will depend on its exposure to climate risks and its ability to adapt^{xvi}.

A framework has been developed that considers the vulnerability of different landscape types to climate change and the types of actions required to support adaptation and conservation of our different landscapes (see below).

Challenges

Fragmentation of habitats and urbanisation of some areas will make it more difficult to connect and support the adaptation of some species and ecosystems. More modelling is required to better understand the potential impacts on individual species and ecosystems, and therefore the interventions required to help them adapt and thrive.

What we can do?				
Landscape	Coastal	Plains	Lower slopes	Uplands
Character	High energy sandstone cliffs and sandy dunefields along the south coast and southern Fleurieu.	Relatively flat, with low rainfall. Low remnancy and degraded. Semi-arid shrublands, grasslands and mallee woodlands.	Lower elevation with moderate rainfall. Low remnancy and often degraded. Grassy woodlands and grasslands, dominated by grey box, mallee box, SA blue gum, box gum and drooping sheoak.	Higher elevation and rainfall. Diverse microclimates. Relatively high remnancy. Sclerophyll forests, woodlands and shrublands dominated by stringybark, messmate and long-leaved box.
Resilience	None to moderate	Low	Low to moderate	Moderate to high
Action	Depends on the site, but may include facilitating migration of species or replacing ecosystems.	Maintain ecosystem services by removing threats, facilitating migration, and buffering and restoring remnants.	Support biodiversity values by removing threats, repairing past impacts, protecting refuges, and maintaining natural features.	Retain significant biodiversity values by removing threats, repairing past impacts and reinstating impaired ecological processes.

Adapted from DEW 2015 & 2016

Hills and Fleurieu trend & condition snapshot 2021

C3. Build the climate resilience of our communities and agriculture

Even with more severe changes (2°C warming and 20% drying), it will still be possible to grow grapes, fruit, wheat and vegetables, and have livestock graze on pasture in the region (SARDI, 2016).

While it is not yet clear which specific adaptations may work best in our region, we can look to regions that are already hotter and drier than ours, nearby and globally, to see what could work. For example, by 2050, Victor Harbor's climate is expected to be like Nuriootpa and Bordertown's climate now^{xvii}.

Annual cropping, horticulture, livestock and dairy businesses can adjust their plans on a shorter-term basis as the climate changes. But for viticulture and perennial horticulture businesses, decisions made now will need to factor in the hotter and drier climate of future decades.

Meanwhile, we will need to prepare our landscapes and our communities for more frequent and severe extreme events, like bushfires, droughts, heatwaves and storms.

Challenges

Having access to the best available climate projections, in a format that is easy to understand and use, is important for supporting communities and industries to plan adaptation actions.

Hills and Fleurieu trend & condition snapshot 2021



ⁱ DEW climate

ⁱⁱ EPA SoE 2018

ⁱⁱⁱ TCFD

^{iv} Paris Agreement

^v Based on announcement made to UN General Assembly on 22 September, 2020

^{vi} Climate Emergency

^{vii} IPCC Policy update 2019

^{viii} IPCC Policy update 2019

^{ix} RH&C IVA

^x Paris Agreement

^{xi} UK Met Office, 2021

^{xii} <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

^{xiii} IPCC 2014

^{xiv} <https://climate-adapt.eea.europa.eu/eu-adaptation-policy/sector-policies/biodiversity>

^{xv}

<https://www.wildlifelandtrust.org.au/index.php/resources/heritage-and-hotspots/44-hotspots>

^{xvi} DEW 2015 & 2016

^{xvii} Analogues Explorer, CCIA