NSW GOVERNMENT

NSW Climate Change Adaptation Action Plan

2025-2029

climatechange.environment.nsw.gov.au

Artist and designer Nikita Ridgeway from Aboriginal design agency Boss Lady Creative Designs created the People and Community symbol.

Acknowledgment of Country

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) acknowledges the Traditional Custodians of the lands where we work and live. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

We pay our respects to Elders past, present and emerging and acknowledge the Aboriginal and Torres Strait Islander people that contributed to the development of this action plan.

We advise this resource may contain images or names of deceased persons in photographs or historical content.

NSW Climate Change Adaptation Action Plan

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Contents

Key concepts

Concept	Definition
Climate change adaptation	Adjustment to the actual or expected effects of climate change. Adaptation plays a key role in reducing exposure and vulnerability to climate change, and can be proactive, reactive, incremental or transformational (IPCC 2022).
Climate change exposure	The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that are exposed to significant climatic variations (IPCC 2022).
Climate change hazard	A potential natural or human-induced physical event, trend or disturbance with negative consequences (IPCC 2022).
Climate change impact	The consequences of climate change. Impacts are when potential changes, risks or opportunities become reality (IPCC 2018).
Climate change resilience	The capacity of systems (including social, economic, engineered, natural and ecosystems) to cope with a hazardous event, trend or disturbance. Coping means responding in ways that maintain the essential function, identity and structure of a system, as well as biodiversity in the case of ecosystems (IPCC 2022).
Climate change risk	When a hazard creates the potential for negative consequences due to the exposure and vulnerability of human or ecological systems. These consequences can include impacts on lives, livelihoods, health and wellbeing, economic, sociocultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species (IPCC 2021a).
Climate change vulnerability	The propensity of exposed elements such as human beings, their livelihoods, and assets to suffer adverse effects when impacted by hazard events (IPCC 2018).
Coastal hazard	Beach erosion, shoreline recession, coastal lake or watercourse entrance instability, coastal inundation, coastal cliff or slope instability, tidal inundation, or erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters *(Coastal Management Act 2016)*.
Green infrastructure	The strategically planned, interconnected set of natural and constructed ecological systems, green spaces and other landscape features that can provide functions and services including air and water purification, temperature management, floodwater management and coastal defence, often with co-benefits for human and ecological wellbeing. Green infrastructure includes planted and remnant native vegetation, soils, wetlands, parks and green open spaces, as well as building and street-level design interventions that incorporate vegetation (IPCC 2022).
Maladaptation	When actions taken lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence (IPCC 2022).

Executive summary

The NSW Government is committed to climate change adaptation

In 2023 the NSW Government passed the *Climate Change (Net Zero Future) Act 2023*, the first climate change act for the state. The Act puts strong targets into law for the first time in NSW to reduce greenhouse gas emissions, a crucial step towards minimising further climate change.

NSW is already living with climate change and a level of further change is locked in, driven by past emissions and any future emissions before the world decarbonises. The people of NSW have already experienced some of the adverse impacts of climate change, such as the recent unprecedented heatwaves, droughts, and bush fires.

The Climate Change (Net Zero Future) Act 2023 legislates an adaptation objective to help make NSW more resilient to a changing climate.

Locked-in climate change poses major and escalating risks for NSW. NSW Treasury estimates that, even if global efforts limit warming to 2°C, economic costs from disasters triggered by extreme weather events will jump from $5.1 billion in 2020-21 to $15.8 billion on average every year by 2060–61 (NSW Treasury 2021; Wood 2021). Climate change doesn't just create extreme weather events, it also causes slow onset changes in day-to-day weather which can have more significant consequences than an acute event. These slow-onset climate changes can result in pests and diseases in new areas, reduce food production, endanger species and create irreversible damage to our natural environment and biodiversity.

We need to adapt for climate change now to help save lives, homes, livelihoods and our environment. The 2015 Paris Agreement, negotiated by members of the United Nations Framework Convention on Climate Change, urges jurisdictions to prioritise adaptation as well as reducing emissions. Every dollar invested in climate change adaptation or disaster risk reduction saves between $2 and $11 in recovery (CSIRO 2020). We know what lies down the path of continued inaction. Failure to adapt effectively will create suffering, loss, costs and impacts that could have been prevented.

The Climate Change (Net Zero Future) Act 2023 does more than just set targets to reduce emissions. It also legislates an adaptation objective to help make NSW more resilient to a changing climate and establishes guiding principles for action to address climate change. This NSW Climate Change Adaptation Action Plan, the first of its kind for NSW, showcases government actions that will help make the adaptation objective a reality.

This plan is foundational, it is focused on putting actions in place that lay the groundwork for future action. It was developed in collaboration with leading agencies in adaptation across the government. The plan includes 46 actions across the themes of advance policy, build capability, improve processes, expand knowledge, communicate, explore new opportunities and enhance existing initiatives. This approach will help move NSW towards climate change resilience, prevent avoidable loss and damage, address known climate change risks, and provide additional benefits besides adaptation.

The NSW Government has also committed to a climate change risk and opportunity assessment for the state. This assessment, the first for NSW, is underway and will identify the highest priority climate change risks and opportunities. This plan will be reviewed in 2026 to inform an update to take advantage of any new information available, such as the findings of this assessment.

1

We need to adapt for climate change now

NSW is already living with climate change

The last decade was the hottest on record globally. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report confirms global surface temperature has risen by 0.8 to 1.1°C since the pre-industrial period (1850–1900). This rise in global temperature has changed the NSW climate.

More frequent and extreme weather events

Over the past few years NSW has experienced a series of devastating extreme weather events including fires, floods, heatwaves and torrential storms. Climate change is increasing the frequency and severity of these acute events (IPCC 2022) and is a key driver in the dramatic surge in disasters world-wide over the past two decades (UNODRR 2020).

The 2022 NSW flood events affected 98 out of 128 local government areas, damaged 15,000 homes and caused over $5.1 billion of insured damages. NSW communities continue to bear the social, environmental and economic costs, with people and communities still displaced, critical infrastructure in disrepair, and insurance either unavailable or unaffordable (NSWRA 2024).

In NSW the 2019–20 Black Summer bush fires caused 26 deaths, destroyed 2,476 homes, burnt 5.5 million hectares of land (NSW Premier & Cabinet 2020) and killed or displaced over 1 billion animals (AIDR 2020). Habitat loss has been devastating, with the fires reducing the area occupied by each species from 56% to 47%, and ecosystem diversity declining from 77% to 74%. The quality of remaining natural habitats has also declined, and habitat fragmentation has increased, reducing the ability of habitat to support native species and ecosystems (DCCEEW 2024).

Major heatwaves have caused more deaths in Australia since 1900 than bush fires, cyclones, earthquakes, floods and severe storms combined (Coates 2014). Western Sydney continues to experience significant urban heat, with temperatures typically 6 to 10°C higher than the rest of the city during heatwaves (Khan 2021). In Sydney, an extra 1,484 heat-related deaths occurred due to climate change between 1991 and 2018 (Vicedo-Cabrera 2021).

Slow changes to everyday weather with significant consequences

In addition to extreme acute weather events, climate change also causes slow-onset change. Small changes to average climate conditions and sea levels can create significant changes in day-to-day weather and long-term weather patterns. The consequences of these slow changes can be even more significant than the impacts of acute events.

For example, rainfall levels in the April-October period in southern NSW declined by 15% in the 2000–2019 period compared with 1900–1999 levels (EPA 2021). Long-term rainfall reduction has led to drying of southern Australia, for example reducing water in the Murray-Darling Basin, our most important river system. Rainfall reduction has caused water insecurity for towns, long-term reduction in agricultural production and mass mortality of wildlife as well as other impacts (IPCC 2022).

Slow-onset climate change has also affected people's health and wellbeing. It has expanded foodborne, waterborne and other diseases like salmonella, typhoid and Ross River virus. It has also increased respiratory tract infections and chronic diseases like asthma, cardiovascular diseases and mental health issues (Parise 2018). In 2022 NSW saw its first cases of Japanese encephalitis, a mosquito-borne disease previously unknown in the state. Experts believe the infection entered Australia via migratory birds from other countries. This followed record-breaking rainfall and warm temperatures, creating ideal conditions for mosquitoes, and allowing the disease to gain a foothold in NSW for the first time (Klein 2022).

Slow-onset change is also causing long-term irreversible damage to ecosystems and our unique biodiversity (IPCC 2022). Climate change can shift the range of temperature, rainfall and climate conditions in which species can survive. These species must either adapt to the changes, migrate to another area with a suitable climate, or face extinction. The Mountain Pygmy-possum, for example, is critically endangered and relies on snow cover to maintain temperatures during hibernation to survive winter. There is limited suitable alpine and sub-alpine habitat for the Mountain Pygmy-possum to migrate to as temperatures increase (DELWP 2016).

Further climate change is locked in

The NSW Government, and governments around the world, are taking strong action to reduce climate change, but even if the world stopped emitting greenhouse gases today, NSW would still experience significant further climate change. Past emissions and any future emissions before the world decarbonises mean a level of further climate change is inevitable.

We have continued to strengthen our understanding of how the climate is changing through the NSW and Australian Regional Climate Modelling (NARCliM) project. NARCliM is a NSW Government-led partnership that began in 2011 and provides climate change projections at the local level for public use.

Adaptation case study

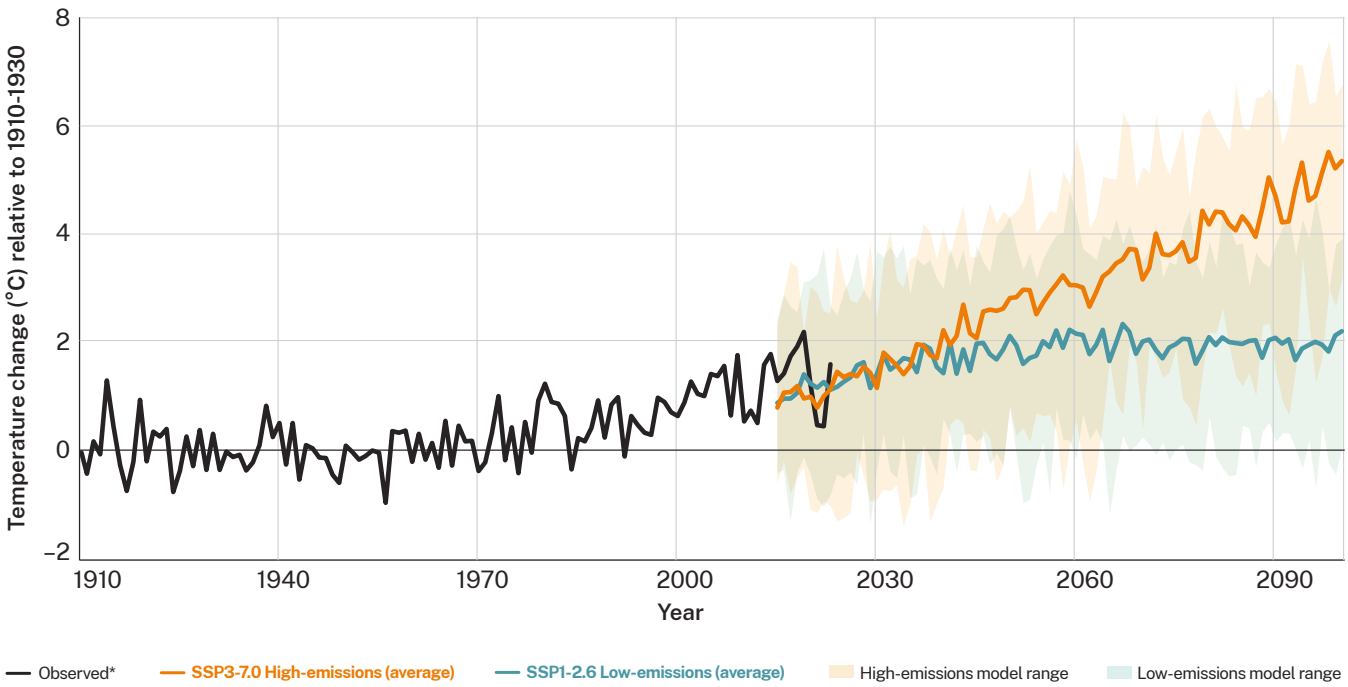
NSW and Australian Regional Climate Modelling (NARCliM)

Future climate change projections are essential information for adaptation. Projections of the impact of climate change in the future at a local level enable us to make decisions today for the climate of tomorrow. For example, NARCliM projections let decision-makers know if an area is likely to have sufficient rainfall or low enough temperatures for certain plant species to continue to grow as the climate changes.

A new generation of modelling, NARCliM2.0, was launched in 2024. These new projections are the most detailed completed anywhere in Australia, comprising of 150-year continuous climate projections at 4km scale and capturing approximately 70% of Australia's population.

The data and information can be accessed from the AdaptNSW website and is available in various formats to suit the needs of different stakeholder groups. Climate change snapshots provide a summary of key changes to our future climate under a low-emissions scenario and a high-emissions scenario to the year 2100. An interactive map allows users to search and obtain data for their region of interest.

The NARCliM project is led by the NSW Government with support from the Australian Capital Territory, South Australia, Victoria, and Western Australia Governments, the University of New South Wales, Murdoch University, and National Computational Infrastructure Australia.



*Data source – Bureau of Meteorology

Figure 1 NARCliM2.0 graph of temperature change relative to observed average air surface temperature across NSW from 1910 to 2100

Shared Socioeconomic Pathways (SSPs) are a range of scenarios for climate change that consider different levels of greenhouse gas emissions, population, economics, social factors, and other key concepts. They include high emissions pathways with limited climate change mitigation and low emissions pathways where mitigation is largely successful (IPCC 2021a). Two SSPs are used in NARCliM2.0, SSP1-2.6, described as a low warming scenario and SSP3-7.0 described as a high warming scenario.

Figure 1 shows the NARCliM2.0 predictions for change in average air surface temperature up to 2100 under SSP1-2.6 and SSP3-7.0 relative to observed average temperatures in NSW over the period 1910 to 1930. Temperatures will rise regardless of the scenario, however the extent of the rise will depend on actions taken globally to limit greenhouse gas emissions. If we achieve the low warming scenario temperature changes for NSW can be capped from around 2050 to the end of the century.

*Observed annual mean temperatures were sourced from the Bureau of Meteorology.

Locked in climate change brings major risks

In the future, even under lower emissions scenarios, climate change impacts and costs will escalate, creating major risks for NSW. According to NSW Treasury modelling for the 2021–22 NSW Intergenerational Report, even under a lower warming scenario of 2°C where efforts to cut emissions largely succeed, NSW is likely to experience significant climate change risks into the future (NSW Treasury 2021).[1]

NSW Treasury modelling estimates between:

$15.8–$17.2b

in total economic costs

from disasters triggered by extreme weather events on average every year by 2060–61, that is a more-than-threefold increase from $5.1 billion in 2020-21

39,000–46,000

NSW homes

will be exposed to coastal erosion and inundation by 2060–61 due to sea level rise

700,000–2.7m

working days

will be lost due to heatwaves by 2060–61

$750m–$1.5b

in lost agricultural production

every year by 2060–61

1. Representative Concentration Pathways (RCPs) are a range of scenarios for climate change that consider different levels of greenhouse gas emissions and land-use. Shared Socioeconomic Pathways (SSPs) were developed to complement RCPs and integrate different levels of socioeconomic development. Two RCPs were used in the NSW Treasury 2021–22 NSW Intergenerational Report. RCP2.6 is described as a low emissions scenario, and RCP8.5 is described as a very high emissions scenario. The lower range of estimates in the NSW Treasury 2021–22 NSW Intergenerational Report reflect a lower warming scenario based on RCP 2.6 and the higher range of estimates reflect a much higher warming scenario based on RCP 8.5. The NSW Treasury 2021–22 NSW Intergenerational Report modelling has not been updated to reflect NARCliM2.0 modelling and the high emissions scenario in the 2021–22 NSW Intergenerational Report is not comparable with the high emissions scenario in the NARCliM2.0 modelling in Figure 1.

Risks are higher for people who are already vulnerable

People who are already vulnerable in our society face disproportionate risks from climate change and are usually least able to adapt. In 2022 the United Nations General Assembly recognised the human right to a clean, healthy, and sustainable environment. In this resolution the United Nations highlighted that while the human rights implications of environmental damage (including from climate change) are felt by individuals and communities around the world, the consequences are felt most acutely by women and girls and those segments of the population that are already in vulnerable situations, including indigenous peoples, children, older persons and persons with disabilities (UNGA 2022).

For example, in NSW Aboriginal people can be more vulnerable to health risks from climate change because they often already experience higher levels of chronic illness and inadequate housing. Aboriginal people are also more likely to live in remote communities, have lower incomes, inadequate access to health and energy infrastructure, and reduced water security and nutrition (Parise 2018). One of the guiding principles in the *Climate Change (Net Zero Future) Act 2023* is that action to address climate change should be consistent with the right to a clean, healthy and sustainable environment.

Risks are higher for already vulnerable species

Climate change poses major risks to certain species (IPCC 2022). In NSW, only 50% of currently threatened species are expected to survive the next 100 years due to future climate change combined with past habitat loss (DCCEEW 2024). Without action to adapt, climate change is predicted to contribute to biodiversity losses of between 3% to 20% in south-eastern Australia between now and 2070 (Drielsma 2017).

We need to adapt now to reduce impacts and risks

NSW needs to adapt now for climate change. Adaptation is adjustment to the actual or expected effects of climate change. Adaptation plays a key role in reducing exposure and vulnerability to climate change, and can be proactive, reactive, incremental, or transformational (IPCC 2022).

Adapting now will help save lives, homes, livelihoods and our environment. We know what lies down the path of continued inaction. Failure to effectively adapt will create suffering, loss, costs and impacts that could have been prevented. Every dollar invested in climate change adaptation or disaster risk reduction saves between $2 and $11 in recovery (CSIRO 2020).

Ambitious and transformative adaptation is critical this decade to reduce costs and impacts and maximise opportunities (Global Commission on Adaptation 2019). In particular, long-term adaptation planning and implementing actions that are flexible and multi-sectoral can help avoid maladaptation. Maladaptation, where action inadvertently increases exposure, risk of adverse outcomes or vulnerability, can be difficult and expensive to change.

Adaptation can be as simple as providing people with a cool place to go during a heatwave or as complex as creating effective policy that makes adaptation part of day-to-day decision-making for governments, organisations, communities and individuals. Adaptation also has many extra benefits. It can improve the wellbeing of our communities, increase the liveability of our cities and regions, restore the health of our ecosystems, create and protect jobs, and strengthen our economy.

Adaptation case study

Futureproofing koalas for climate change

Climate change is a serious threat to koala populations, changing the nutritional value of feed trees, reducing the area of available habitat and increasing the frequency and severity of severe weather events.

The NSW Koala Strategy is responding to these challenges in a variety of ways to help ensure koala populations are better protected from climate change. For example, the strategy uses climate change modelling to identify and protect koala habitat that is resilient to climate change, it promotes climate-ready revegetation approaches and it funds research to continue to improve our understanding of the impacts of climate change on koalas and their habitat.

In addition to this, $16 million has been committed under the strategy to deliver a landscape-scale restoration project in partnership with Taronga Conservation Society Australia. Over 10 years, the project will establish the largest box-gum woodland restoration and rewilding project ever attempted, creating climate change-resilient habitat for koalas and other threatened species.

Adaptation case study

Making climate change part of business-as-usual for the NSW Government

The NSW Government is enhancing the capability of government entities to manage climate change risks.

This program of work includes enhanced climate leadership and oversight, including an executive education series on climate change impacts, risks and practices and responsibilities for managing them. Training has also been delivered to government staff under the Climate Risk Ready Program to build the technical capability of public sector risk professionals.

The program has also strengthened and streamlined governance of climate-related matters to improve engagement and efficiency and enhance collaboration across NSW Government agencies and with other Australian governments.

The program has also helped embed climate change considerations in government decision-making, for example, through releasing a Disaster Cost-Benefit Framework in October 2023, enhancing the Risk Management Toolkit by incorporating climate change risk resources (via the AdaptNSW website) in October 2022 and incorporating climate change considerations into the NSW Gateway Policy released in 2022.

2

Adaptation policy context

NSW has legislated action on climate change

The NSW Government is taking swift and decisive action on climate change. In 2023 the government passed the historic *Climate Change (Net Zero Future) Act 2023*, the first climate change act for NSW.

The Act sets strong emission reduction targets to reduce further climate change and legislates an adaptation objective to make NSW more resilient to a changing climate. The Act also establishes guiding principles for action to address climate change. These principles state that the NSW Government is responsible for urgently developing best practice strategies, policies and programs to address climate change.

The Minister for Climate Change is responsible for the Act's adaptation objective. The NSW Government Department of Climate Change, Energy, the Environment and Water leads development of state-level adaptation policy to help the Minister discharge this responsibility. This plan was developed by the department as part of this role.

The Act also established an independent Net Zero Commission. This commission will monitor, review and report on progress in NSW towards the Act's emission reduction targets and adaptation objective. The commission must consider the Act's guiding principles for action to address climate change in its role and may advise the Minister for Climate Change on how to give effect to them. The commission is expected to play a key role in improving accountability and ensuring continued progress towards the state's legislated goals.

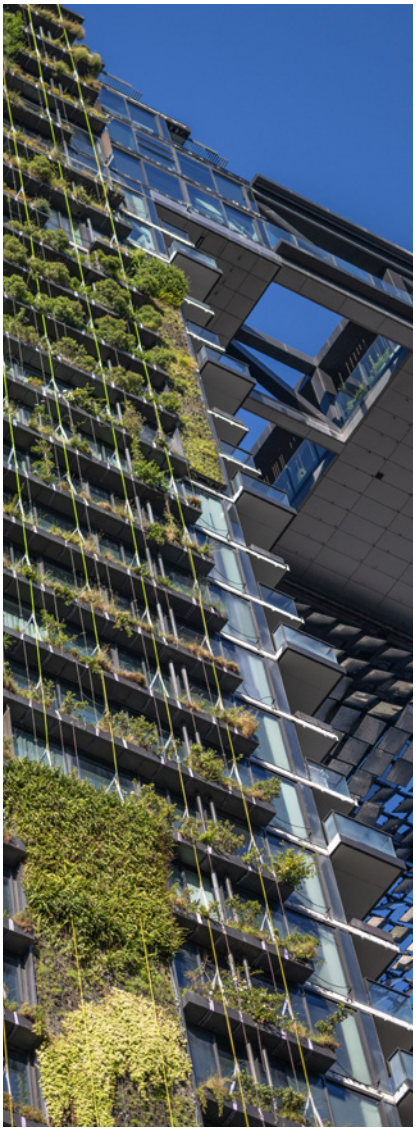
NSW Climate Change Adaptation Strategy commitments

The **NSW Climate Change Adaptation Strategy** is the NSW Government's guiding policy on adaptation. It supports implementation of the Act's adaptation objective.

The strategy sets 4 key priorities:

These priorities create a long-term policy process for adaptation and include a suite of short and long-term actions. The government has invested $93.7 million over 8 years to deliver the strategy.

This NSW Climate Change Adaptation Action Plan is the first to be delivered under the strategy and the first time NSW will have a state-level plan to adapt for climate change.



Deliver state-level adaptation actions plans
at least every 5 years

Deliver climate change risk and opportunity assessments
at least every 5 years

Develop robust and trusted metrics and information

Embed climate change adaptation
in government decision making

NSW action will help achieve the global adaptation goal

In 2015, Australia and 195 other countries signed the Paris Agreement (UNFCCC 2015). This is an international treaty under the United Nations Framework Convention on Climate Change. The Paris Agreement has two primary goals. The first goal is to limit global warming to well below 2°C compared to pre-industrial levels, while pursuing efforts to limit the increase to 1.5°C.

The second goal of the Paris Agreement is on global adaptation. Signatories are called on to reduce climate change vulnerability, enhance adaptive capacity, strengthen resilience and ensure an adequate adaptive response in the context of the temperature goals of the agreement. The agreement urges jurisdictions to prioritise adaptation as well as reducing greenhouse gas emissions. The agreement also encourages governments to develop strong adaptation policy, strategy and plans, monitoring and evaluation, and climate change risk assessments to enable effective action. It also recognises the importance of averting, minimising and addressing loss and damage from climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing loss and damage.

In NSW the *Climate Change (Net Zero Future) Act 2023* puts elements of the Paris Agreement into legislation. Part of the Act's purpose is to give effect to the international commitment established through the Paris Agreement to increase the ability of countries to adapt to the adverse impacts of climate change.

The NSW Government has also publicly endorsed the Paris Agreement under the **NSW Climate Change Policy Framework 2016** and stated it would take action consistent with the level of effort required to achieve Australia's commitments under that agreement.

This plan, the *Climate Change (Net Zero Future) Act 2023*, the NSW Climate Change Adaptation Strategy and the NSW Climate Change Policy Framework 2016 all help NSW give effect to elements of the Paris Agreement.

Countries that are parties to the United Nations Framework Convention on Climate Change, such as Australia, meet to review and monitor implementation of the convention and its instruments, such as the Paris Agreement. The 2023 meeting stressed the urgent need for strengthened adaptation because climate change is already impacting lives and livelihoods across the world.

NSW is working with the Australian Government

To support Australia's ongoing adaptation commitments and actions under the Paris Agreement, the Australian Government released the National Climate Resilience and Adaptation Strategy 2021–2025 and has committed $27.4 million over 2 years to deliver Australia's first National Climate Risk Assessment and National Adaptation Plan. The NSW Government is engaging with the Australian Government to inform implementation of the national strategy and inform development of the national assessment and national plan.

This plan complements disaster risk reduction action

The NSW Government passed the *NSW Reconstruction Authority Act 2022* after the NSW Climate Change Adaptation Strategy was released. This Act established the NSW Reconstruction Authority. Part of the purpose of this authority is disaster prevention, preparedness and adaptation.

In 2024, the authority released its first State Disaster Mitigation Plan to guide mitigation of disasters across the state. This plan considered the impact of climate change on disasters.

The authority is also responsible for guiding development of local Disaster Adaptation Plans which set out how both the authority and other entities will prevent or minimise the impact of disasters. Disaster Adaptation Plans must also assess and consider the impacts of climate change. The broad powers of the authority under the legislation mean it is likely to play a key role in climate change adaptation for disasters going forward. Actions in this plan and the State Disaster Mitigation Plan and future Disaster Adaptation Plans are designed to be complementary.

The United Nations Sendai Framework for Disaster Risk Reduction 2015–2030 emphasises the value of coherence across policies on climate change adaptation and disaster risk reduction, while respecting the difference between the two (UNODRR 2015). The key difference between disaster risk reduction and climate change adaptation is that climate change adaptation has a broader focus beyond just disasters. This includes both positive and negative long-term change, the role of transformational adaptation, the importance of thinking about climate change in everyday decision-making, the opportunities climate change offers, and more.

This plan complements other NSW Government adaptation action

It is necessary for all sectors of the economy and all levels of government to consider and plan for climate change risk and adaptation.

In addition to releasing this plan, the NSW Climate Change Adaptation Strategy requires all NSW Government agencies to identify their own climate change risks in alignment with the Climate Risk Ready NSW Guide and climate change projections. Planning to adapt to identified climate change risks is an important measure that can reduce exposure and vulnerability to climate change. Sector or agency level climate change adaptation plans, such as the NSW Environment Protection Authority's Climate Change Action Plan 2023-26, ensure climate change risk is considered and embedded into everyday decision-making and planning at all levels. Sector and agency-based adaptation planning are complementary to this plan and allow state-wide adaptation actions to consider the cross-cutting risks and opportunities needed to build state-level resilience.

The *Climate Change (Net Zero Future) Act 2023* establishes guiding principles for action to address climate change. The Net Zero Commission established by the Act must consider the guiding principles when independently monitoring, reviewing and reporting on NSW's progress towards the adaptation objective. NSW Government agencies should also use these principles when considering and planning for climate change risk and adaptation.

All NSW stakeholders need to adapt for climate change

Action by the NSW Government alone will not be enough to build climate change resilience. The challenge is at too great a scale.

Managing the impacts and risks of climate change requires a concerted effort from almost all parts of society. There are vital roles to play for business and industry, other levels of government, research organisations, non-government organisations, communities and individuals. The government will be using its existing networks, as well as actively looking for opportunities to work with other stakeholders, to deliver effective responses to adaptation challenges beyond this plan.

3

The NSW Government is acting now to protect what we value

NSW climate change risk and opportunity assessment

The NSW Climate Change Adaptation Strategy requires the NSW Government to complete a climate change risk and opportunity assessment for the state at least every 5 years to inform development of adaptation action plans.

Assessments of this type are highly complex and relatively new globally. The first assessment for NSW is still underway. However, there is more than sufficient information on some risks and effective action to start acting now. The *Climate Change (Net Zero Future) Act 2023* guiding principles state action to address climate change should be taken as early as possible to minimise cost and adverse impacts. Starting action now can protect people, livelihoods and ecosystems that might otherwise be jeopardised.

4

Delivery of the plan

Responsible agencies

Climate change creates impacts and risks for almost all areas of society, the environment and the economy. This means agencies across the NSW Government are responsible for adaptation. Many actions in this plan will be delivered collaboratively by multiple agencies, however, only lead agencies responsible for delivery of actions are listed in this plan.

Review and update

The plan will be reviewed in 2026 by the Department of Climate Change, Energy, the Environment and Water. This review will inform an update of the plan, taking advantage of any new information available, such as the findings of the first NSW climate change risk and opportunity assessment. The review and update may also include further stakeholder engagement to support an effective update of the plan. This review and update process will help ensure the plan remains effective.

The Net Zero Commission may have a role in the review as part of its responsibility to monitor, review and provide advice and recommendations to the Minister for Climate Change on progress in relation to the adaptation objective and as part of its other responsibilities.

First NSW Climate Change Adaptation Action Plan 2025 -2029

2022-2024

Development & publication

Plan developed and published

2026

Review

Review the plan based on new evidence such as NSW climate change risk and opportunity assessment findings and other information

Update

Update the plan based on new evidence

2029 -2030

Evaluation

Evaluation of the plan to understand whether key objectives were achieved and to inform future adaptation action plans

Monitoring and evaluation

The Department of Climate Change, Energy, the Environment and Water will coordinate the end-of-program evaluation. This process will assess if the plan has been effective. The plan may also be reviewed externally to assess how well it contributes to the adaptation objective in the *Climate Change (Net Zero Future) Act 2023*. The Net Zero Commission may also have a role to play in evaluating the plan.

5

Key themes that shape this plan

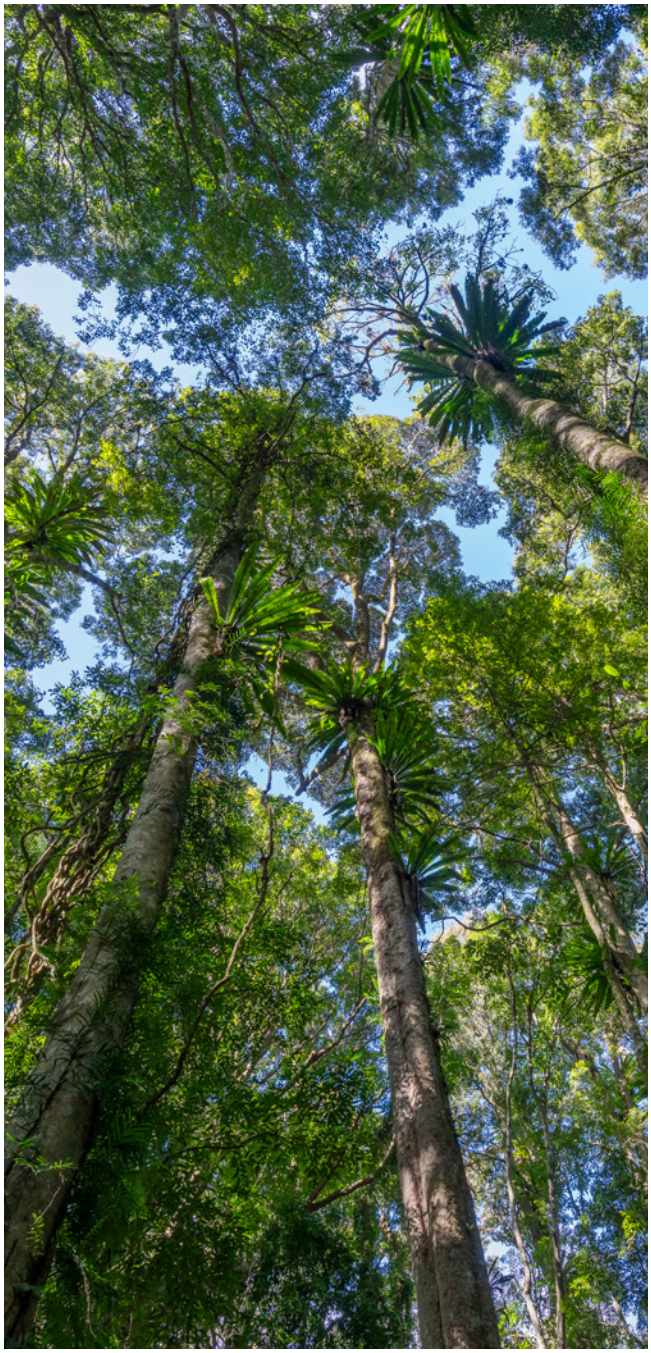
Key themes that shape this plan

The actions in this plan are mainly foundational. They put actions and processes in place that lay the groundwork for future action. They help create the knowledge, skills, resources and processes needed to enable further adaptation on a larger scale.

Most actions are also focused on known climate change risks for important areas. Starting action now to address these known risks will help prevent avoidable loss and damage in critical sectors such as planning, transport, biodiversity and energy.

Mainstreaming adaptation is also a key focus of the plan. Mainstreaming is when climate change risk and adaptation are considered in day-to-day planning and decision-making, instead of as a stand-alone activity. Because climate change risk will affect almost all aspects of life, considering it in everyday decision-making is critical. Stand-alone adaptation initiatives are also important but will not be enough to build state-level resilience. At a minimum, mainstreaming involves assessing the climate change risk for an activity and finding ways to reduce that risk. If the risk can't be reduced, the activity may be changed to adapt to the risk (World Resources Institute 2018). Mainstreaming is considered one of the more effective ways to adapt to climate change. The IPCC advocates for mainstreaming as an effective way to reduce loss and damage and provide wider benefits (IPCC 2023).

Without the knowledge base of a climate change risk and opportunity assessment for NSW, this plan was created collaboratively with experts and leaders in adaptation across the NSW Government. The actions selected for this plan either mainstream adaptation or are measures supported by international leading practice. The plan is not a stocktake of all government actions but rather showcases key actions by leading agencies. Some of the actions are ongoing. This signals that adaptation is an ongoing process and needs to continue as climate change risks are identified, change and escalate. These actions still have deliverables over the timeframe of the plan, and progress will be monitored and evaluated.



Advance policy

For governments, mainstreaming can involve making climate change risks and adaptation part of policy development and review. Policy is a key tool government can use to shape action throughout the state.

Making climate change risks and adaptation part of policy frameworks, especially legislation, can strengthen and sustain adaptation over the long term. Climate change impacts and risks are felt over long periods of time, so action needs to be taken early and be sustained to prevent loss and damage (IPCC 2022).

The initiatives in this plan are only part of NSW Government action in the adaptation policy space. One of the NSW Climate Change Adaptation Strategy's 4 priorities was to embed climate change adaptation in government decision-making and wide-reaching actions in this space are being carried out under the strategy. Other agencies such as the NSW Reconstruction Authority are also developing policy to help shape adaptation action.

Theme 1: Advance policy

Action	Rationale	Due	Responsible agency
1. Review the land-use planning framework to better embed climate change risk and adaptation considerations, including for urban heat, flooding, bush fire and coastal hazards.	Climate change risks are wide-ranging, applicable state-wide, and impact many parts of the state's society, environment and economy. It is important that planning authorities, communities and landholders have a clear and consistent land use planning framework to guide how planning decisions are made in light of managing and mitigating climate change impacts and risks. Making climate change risks and adaptation part of land-use planning frameworks is an important way to reduce vulnerability and adapt. Effective land-use planning for climate change can prevent loss and damage, address multiple hazards, reduce systematic vulnerability, constrain knock-on hazard generation, enhance social capital and more. (Strategic planning control actions 2, 6 and 7 in the State Disaster Mitigation Plan are complementary to this action.)	Ongoing	Department of Planning, Housing and Infrastructure (DPHI) - Planning
2. Develop a landscape restoration framework for NSW as part of the NSW plan for nature.	A landscape restoration framework would support government, industry, landholders, land managers and traditional owners to deliver the landscape-scale restoration required to build climate change resilience, reverse biodiversity declines, become nature-positive and support resilient rural ecosystems and economies. Landscape-scale restoration can improve the resilience of species, biological communities and ecosystem processes by increasing the size of natural areas, restoring degraded areas and reducing non-climatic stressors. Effective landscape-scale restoration can connect habitat allowing species to move to new ecologically appropriate locations. It can increase connectivity between conserved or protected areas, target intensive management for vulnerable species and protect refugial areas where species can survive locally.	Quarter 2 2025	Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Biodiversity Conservation and Science (BCS)

Theme 1: Advance policy

Action	Rationale	Due	Responsible agency
3. Publish the Saving our Species Key Threatening Process Strategy for Anthropogenic Climate Change.	A strategy for addressing the impact of anthropogenic climate change on threatened species is required to guide investment. Anthropogenic Climate Change is listed as a key threatening process in the *Biodiversity Conservation Act 2016*. The strategy will identify the priority actions needed to address the impacts of climate change on threatened species and ecological communities. This includes strategic actions to improve management effectiveness and research actions to address critical knowledge gaps.	Quarter 2 2026	DCCEEW - BCS
4. Review the NSW framework for managing coastal hazards under the *Coastal Management Act 2016* to assess if it is achieving its objectives in relation to responding to current and future coastal hazards under climate change.	The *Coastal Management Act 2016* already considers climate change. This review will ensure the Act remains fit for purpose and in line with the scale of current and future climate change impacts and risks.	Quarter 4 2028	DCCEEW - BCS
5. Analyse how government can better support natural environment adaptation in the implementation of the NSW plan for nature.	Climate change is threatening NSW's natural environment and unique biodiversity. Without action to adapt, climate change is predicted to contribute to biodiversity losses of 3% to 20% in south-eastern Australia between now and 2070 (Drielsma 2017). Considering how the NSW Government can support the natural environment to adapt as part of implementing the NSW plan for nature is an important part of setting nature on a path to recovery.	Ongoing	DCCEEW - BCS

Theme 1: Advance policy

Action	Rationale	Due	Responsible agency
6. Ensure water strategies, policies, and regulations (including water allocation and sharing) consider climate change impacts and risks.	Water availability and security in NSW is under increased pressure due to climate change. It is important that the state's water is appropriately managed and allocated. Considering climate change impacts and risks in business-as-usual water strategy development is an important way to mainstream adaptation.	Ongoing	DCCEEW - Water
7. Improve integration of drought and incident management planning in response to climate change, ensuring preparedness and capability are maintained.	The cascading and compounding impacts of climate change will drive the increased frequency of droughts and overlap with incidents and emergencies that will impact water availability. Proactive planning that considers climate change risks and adaptation will enable more effective water management and reduce impacts on our communities and the environment.	Ongoing	DCCEEW - Water
8. Update long-term water plans to include consideration of climate change impacts and risks for water for the environment.	Water is vital for life. This action addresses a key known climate change risk for NSW. Climate change creates risks for water availability. Projected changes in rainfall patterns, warmer conditions, and increased evaporation will impact future water availability. The frequency, intensity and duration of droughts are also predicted to increase with climate change, which may affect water quality and the ecology of our rivers (DPIE 2021). Long-term water plans guide the management of water for the environment outcomes over the longer term. The plans improve the way water is managed to maximise river and wetlands health outcomes from all available water within and between catchments. They set objectives, targets and watering requirements for key plants, waterbirds, fish and ecosystem functions over 5-, 10- and 20-year timeframes. This action will incorporate climate change predictions into hydrological models for environmental water and test the effectiveness of different delivery strategies. The work will guide risk assessment and adaptive management planning and actions. The long-term water plans will be updated to include new objectives and targets, and new strategies for supporting river, wetland and floodplain ecosystem condition in the face of a changing climate in NSW.	Quarter 4 2025	DCCEEW - BCS

Theme 1: Advance policy

Action	Rationale	Due	Responsible agency
9. Advance the Marine Heatwave Response Plan.	A Marine Heatwave Response Plan was developed and released in 2023 in response to new forecasting ability of these extreme climate events in the marine estate. The plan sets out the actions that will be taken in the marine heatwave cycle, including an early warning system, incident response, management and recovery actions and communications. The plan ensures that consistent and credible information is communicated to stakeholders, so they are prepared for these events and loss of economic and ecological values is minimised. This work will expand on these components of the plan, develop several unique frameworks for prioritisation and pilot industry specific response plans. This work will be scaled up as further investment becomes available.	Ongoing	Department of Primary Industries and Regional Development (DPIRD)
10. Continue to inform and influence policy, legislative, and compliance frameworks for primary industries' outcomes in climate change adaptation.	There is significant work being undertaken nationally, in other jurisdictions and by the NSW Government, in relation to climate change and adaptation. This includes delivering on the National Statement on Climate Change and Agriculture (2023), which commits governments to working in partnership with the agriculture sector to continue to improve adaptation and resilience to a changing climate. The Department of Primary Industries and Regional Development (DPIRD) has significant policy, research, development, and extension expertise and capability that informs and influences policy, legislative and compliance frameworks for primary industries as they relate to climate change adaptation. DPIRD has already conducted a Climate Vulnerability Assessment (DPI 2024). Utilising networks and building and utilising partnerships between governments and with industry is critical to delivering climate change adaptation outcomes.	Ongoing	DPIRD

Build capability

Climate change risk management and adaptation are relatively new concepts. Mainstreaming them requires people who are not experts to understand these concepts and have the knowledge and skills to put them into practice.

To be able to consider these concepts in decision-making, people need to understand what climate change impacts and risks are, why they are important, how to assess them, how to adapt and manage those risks, and how to report, monitor and evaluate. This means the right training, resources and guidance are essential to help people make effective adaptation decisions.

Building this capability in the NSW public service, in local government and for other stakeholders is a foundational and ongoing piece of work that is essential to mainstreaming climate change adaptation. This plan highlights some of the key activities the NSW Government is carrying out to build this capability.

Theme 2: Build capability

Action	Rationale	Due	Responsible agency
11. Continue to support government entities to build their capability to identify, assess, manage, disclose and monitor climate change related impacts and risks on their assets, decision-making and service delivery.	NSW Government entities must have the capability to identify and respond to their climate change risks. The government will build upon work already underway to help government entities continue to develop this capability. Building capability across government is critical to mainstreaming adaptation.	Quarter 1 2025	DCCEEW – Energy, Climate Change and Sustainability (ECCS)
12. Implement education and capability building programs for planners, agency and consent authority staff to promote climate change risk management in planning.	Planning is a key area that requires higher levels of capability because appropriate planning is critical to reducing climate change risk and for adaptation. Investing in upskilling planners, agency and consent authority staff results in better decision-making and responses to climate change-related issues at all levels.	Ongoing	DPHI - Planning
13. Establish capability to support the development of co-designed climate change adaptation measures with and for Aboriginal communities in NSW. This will include forming and continuing effective partnerships on climate change adaptation with Aboriginal communities, their organisations and key stakeholders across NSW Government. It will also include enabling place-based caring for Country initiatives that promote and support well adapted and healthy communities and Country across the cultural landscape.	Aboriginal people are disproportionately exposed to a range of climate extremes in heat, rainfall and drought, and currently experience higher rates of socioeconomic disadvantages which will impact their capacity to adapt to climate change (Standen 2022). The degradation of the natural environment from climate change is impacting the availability of land and water resources and may prevent Aboriginal people from undertaking important cultural practices, worsening the trauma already experienced due to dislocation from Country and culture. This action builds capability to partner with Aboriginal communities to develop more significant actions and strategies to help those communities to adapt to climate change. (Strategic planning control actions 26 and 27 in the State Disaster Mitigation Plan are complementary to this action.)	Quarter 2 2026	DCCEEW - ECCS

Theme 2: Build capability

Action	Rationale	Due	Responsible agency
14. Develop training on climate change adaptation and mitigation, including health impacts of climate change, such as mental health, to guide the implementation of adaptation actions across the healthcare system.	Climate change impacts, such as severe weather events, may impede access to health care and disrupt service delivery. Considering this, NSW Health requires additional training to build capability to supplement existing programs, to ensure services are resilient to climate change impacts and risks. Training resources for the health system will raise the profile of climate change adaptation and mitigation actions across the NSW Health workforce.	Quarter 1 2027	NSW Health
15. Develop guidance and/or tools to support NSW Health organisations to identify and assess risks to supply chain, infrastructure, and service delivery to guide the implementation of adaptation actions across the healthcare system.	Climate change impacts, such as severe weather events, may impede access to health care and disrupt service delivery. Considering this, NSW Health requires additional guidance to supplement existing programs, to ensure our services are resilient to climate change impacts. Guidance and/or tools for the health system will raise the profile of climate change adaptation and mitigation actions across the NSW Health workforce.	Quarter 1 2027	NSW Health
16. Ensure transport projects and operations consider climate change risks by updating Transport for NSW's project risk assessment guidelines, incorporating minimum risk assessment and adaptation planning requirements, and clear thresholds of application.	Detailed climate change risk assessments and guidance for all NSW transport projects and operations would enable Transport for NSW to better adapt its entire network and respond effectively to adverse climate-related events. (Strategic planning control action 18 in the State Disaster Mitigation Plan is complementary to this action.)	Quarter 1 2025	Transport for NSW (TfNSW)

Theme 2: Build capability

Action	Rationale	Due	Responsible agency
17. Develop guidance for industry and councils to support delivery of increased green infrastructure and cooler places.	Extending and enhancing green infrastructure is key to adapting to the effects of climate change, particularly increased urban heat. In addition to essential urban cooling benefits, green infrastructure provides a suite of co-benefits for local amenity, accessibility, walkability, mental and physical health, and urban biodiversity.	Ongoing	DPHI - Planning
18. Continue to work with primary producers and industry groups that support them to build understanding of changing climatic conditions and climatic vulnerabilities and how they can adapt to be more resilient.	Climate change impacts such as increasing average temperatures, changes in rainfall patterns, more extreme weather events and pressure from pests and diseases impact on the productivity and sustainability of primary industries. Adaptation options are important for primary producers to continue to manage climate change and maintain productivity growth. The Department of Primary Industries and Regional Development will continue to work with primary producers and industry groups to improve their ability to adapt to climate change and to lessen its impact. The level of activity in relation to this action can be scaled-up with co-investment between industry and government.	Ongoing	DPIRD
19. Develop guidelines to enable robust and sustainable management decisions around climate-proofing freshwater and marine restoration and management.	There is increasing appetite and need to climate-proof marine restoration through translocation or habitat modification, yet guidelines do not exist to aid proponents in developing permits or marine managers in making decisions to allow such activities. These guidelines will outline key considerations and end points to ensure these activities are required, sustainable and environmentally sound. This work will be at a high level within normal resource management discussion until further funding is sought.	Quarter 1 2025	DPIRD

Adaptation case study

Building adaptive capacity to heat in Western Sydney

Climate change projections show western Sydney will be hit with approximately 10 extra days of extreme heat each year between now and 2040, and 20 extra days by 2070.

NSW Health research has found severe heatwaves in greater Sydney cause an increase in mortality of up to 13%. Heat has cumulative and cascading impacts on our communities, economies and ecosystems. The decisions we make in planning and design today can play a major role in mitigating these impacts in the future. Urban spaces are also getting hotter because buildings and hard surfaces absorb and radiate heat and blue and green spaces, which reduce temperatures, are removed to make way for more development. This creates what is known as the 'urban heat island effect'. Western Sydney Regional Organisation of Councils brought scientists, academics, experts and council members together to develop tools to cool western Sydney. These tools are the basis of the Urban Heat Planning Toolkit and the Cool Suburbs design support tool.

The toolkit helps local governments strengthen planning provisions to reduce the impacts of heat. It outlines design strategies from cool roofs, to green cover, to sustainable water supply that can help local governments as they plan and design, and also as they support their communities to adapt, survive and thrive in a hotter climate. The toolkit looks at the full scale of interventions possible to reduce urban heat and matches up where local government has a role to play. The Cool Suburbs design support tool is a rating tool that guides best practice heat resilience in design and development. The tool can support various scales of development from individual lots to entire precincts and guides all stages of the development process. Cool Suburbs fills a gap by synthesising urban heat science into an easy-to-use platform. Cool Suburbs provides best practice guidance on everything from solar orientation to wind direction, cool materials to greenery.

Adaptation case study

Worimi Conservation Lands

East coast lows, sea level rise and changing wind patterns can cause coastal dune systems to change.

Worimi Conservation Lands (north of Newcastle) have experienced severe dune erosion from both ocean inundation and increased frequency and strength of southerly winds and wave action. The traditional owners, the Worimi people, in partnership with NSW National Parks and Wildlife, have collaborated to develop a management plan. This uses Aboriginal cultural knowledge and scientific methods to minimise and manage the climate change impacts on the frontal dune system of the Worimi Conservation Lands.

Storm events such as heavy rains and tidal surges have become more frequent. In 2012 an east coast low storm surge in the Worimi Conservation Lands caused major flooding and erosion when unusually high tides of over 2 metres breached the frontal dunes.

Flooding events compromise the essential freshwater vegetation ecosystems and increased winds lead to faster changes in dune structures. Management actions to address the erosion of the frontal dunes included planting stabilising vegetation (like spinifex) and sand fencing. These actions not only help to combat dune depletion and movement, but also assist in protecting important Aboriginal cultural sites and assets throughout the area.

This partnership continues to support and explore on-ground climate change adaptation and enhanced environmental outcomes.

Adaptation case study

Climate resilient farming with Aboriginal knowledge

Moodji farm is a thriving hub for people to come together to develop climate resilience, engage in Aboriginal culture and learn about growing food in a climate responsive way.

Moodji farm (Moodji meaning "mate" in local Djiringanj language) draws on Aboriginal historian Bruce Pascoe's book, Dark Emu, to honour, repair and reinstate the intellectual and cultural heritage of the Yuin Nation.

Over the past several years, enduring drought, bush fires, water restrictions, unprecedented wind and rain events and compounding COVID-19 restrictions highlighted the need to educate the community about how to adapt to the changing climate and the economic instability in the community it creates.

With NSW Government grant funding the farm incorporated an enhanced water harvesting and irrigation system, added 6 new composting systems and 3 worm farms. A series of workshops and events were also developed. The farm is a working model of integrating sustainable food production and Aboriginal heritage thinking.

Improve processes

NSW Government agencies are at various levels of maturity when it comes to managing climate change risks.

Some agencies are leading the way and already have frameworks in place to consider climate change risks in various decisions. These agencies are now able to create processes to make decisions on adaptation more consistent, or use systems approaches that identify cross-cutting risks.

Theme 3: Improve processes

Action	Rationale	Due	Responsible agency
20. Develop ways of reporting risks consistently across the transport sector.	Consistent reporting of climate change risks enables Transport for NSW to understand both current and future potential risks, supporting the consideration of climate risks in decision-making.	Quarter 4 2025	TfNSW
21. Ensure water utilities and water infrastructure owners use a systems approach to assess and address climate change risk.	Water security can be improved across NSW through a consistent approach to climate change risk assessments, adopted by all water utilities and water infrastructure owners. A systems approach will identify cross-functional risks and opportunities within water utilities and for water infrastructure owners, and across the communities, businesses and natural environments that rely on them. Responding to these risks can result in better adaptation outcomes for water utilities, water infrastructure owners and the communities they support. (Strategic planning control actions 18 and 19 in the State Disaster Mitigation Plan are complementary to this action.)	Ongoing	DCCEEW - Water

Adaptation case study

Resilient Penrith Action Plan

Communities that adapt and plan for climate change now can build a higher level of resilience, giving them a greater capacity to withstand shocks and stresses and recover more quickly.

Penrith City Council has developed a Resilient Penrith Action Plan to help create a more resilient city and community as the climate changes. The council engaged a consultant to work through a climate change risk assessment process using the NSW Government's Guide to Climate Change Risk Assessment for NSW Local Government. To inform the risk assessment, council drew on analysis of the **interactive map** and **regional snapshots** developed based on NSW and Australian Regional Climate Modelling as well as other key information. The consultant held 9 workshops with council management and wider staff. The workshops explored the future climate change impacts for the region and collected information on key risks for each council responsibility sector.

The process created a council-wide risk assessment that identified 48 risks categorised from extreme to low. These risks were then added to Penrith City Council's corporate risk registers. Risks were put through council's risk-analysis software, which is used for standard corporate risk assessment. This process showed what residual risks remain after mitigation. If the residual risk was over council's tolerance level, then council investigated what actions to take to avoid that risk. The Resilient Penrith Action Plan pulled all these risks together and identified actions. The plan goes from 2021-2030 and will be reviewed every 4 years. Council will also look at it every year to see what to include in the annual operational plan.

Expand knowledge

Good adaptation decisions require a continuously improving knowledge base.

How climate change will affect our environment, society and economy is complex and difficult to predict. It is also constantly changing as climate change is uncertain and dependent on future greenhouse gas emissions.

To better understand climate change impacts and risks, ongoing research, monitoring, collection of data and modelling is needed. This knowledge also needs to be produced and shared in a form that can be used by decision-makers for it to be valuable. Reliable assessment of climate change risks and good adaptation policy, projects and activities can only be developed using good and accessible evidence.

The actions in this plan are only part of the NSW Government's action to build a knowledge base for adaptation. One of the NSW Climate Change Adaptation Strategy's 4 priorities is to develop robust and trusted metrics and information on climate change risk. There are a wide range of actions being carried out under that priority. Individual government agencies are also building their own knowledge in this space.

Theme 4: Expand knowledge

Action	Rationale	Due	Responsible agency
22. Improve and apply our understanding of climate change impacts and risks on water management and the environment, including surface water, ground water, wastewater, stormwater, and water quality.	Water is a vital resource. Improving understanding of climate change impacts and risks for water management and infrastructure will help ensure there is fit for purpose water for healthy natural environments, liveable cities, towns, regions and a strong economy.	Ongoing	DCCEEW - Water
23. Update biodiversity resilience and connectivity modelling to inform conservation and planning decision-making.	Biodiversity resilience and connectivity science supports the assessment of status and trends of biodiversity across NSW over time. Embedding this evidence into planning processes can support natural environment adaptation. This will also enable green infrastructure, including biodiversity restoration at different scales, to support the community and build asset protection.	Quarter 4 2025	DCCEEW - BCS
24. Undertake research and monitoring to rapidly detect changes to fire risks in ecosystems.	Establishing a long-term ecosystem and land management monitoring program will support adaptive management approaches to ecosystem and land management required due to changing fire regimes and climate.	Quarter 4 2026	DCCEEW - BCS
25. a. Provide integrated, quantitative bush fire risk estimation (current and future) as part of bush fire risk modelling.	Providing quantitative risk estimation will support local bush fire management committees in the development of bush fire risk management plans as well as state-wide risk assessments and strategic planning.	Quarter 4 2026	NSW Rural Fire Service (NSW RFS)
25. b. Provide quantitative bush fire risk estimation for environmental and Aboriginal cultural values (current and future) as part of bush fire risk modelling	Introducing quantitative risk estimation into bush fire management plans will support land managers to mitigate risks to environmental and cultural heritage assets.	Quarter 4 2026	DCCEEW - BCS

Theme 4: Expand knowledge

Action	Rationale	Due	Responsible agency
26. Establish research and monitoring to underpin adaptation and restoration strategies that help mitigate the impacts of climate change on the marine species protected under the *Biodiversity Conservation Act 2016*.	Establishing research and monitoring to understand ecosystem impacts of climate change and extreme events on marine species protected by the *Biodiversity Conservation Act 2016*. This will drive marine estate adaptation and restoration strategies and deliver actions to reduce risk to marine species, ecosystems and marine and coastal communities. Examples of marine species protected under the Act are marine reptiles, mammals and birds.	Quarter 4 2028	DCCEEW - BCS
27. Investigate the impacts and risks of the changing climate on the power system, including consumer demand, generation and network availability and the implications this has for NSW's electricity market and the net zero energy transition.	Unmanaged climate change risks to energy security could disrupt the NSW economy, undermine NSW's energy transition, and impose higher living costs on NSW businesses and households. This action aims to ensure that NSW's net zero energy transition is resilient to climate change. The Australian Energy Market Operator is exploring extending its forecasting to include more climate change factors. (Strategic planning control actions 18 and 19 in the State Disaster Mitigation Plan are complementary to this action.)	Quarter 2 2025	DCCEEW - ECCS
28. Undertake social research into the impact of climate change on NSW workers.	Climate change will exacerbate existing challenges and may introduce new hazards and risks for workers and workplaces to manage. This action aims to understand the worker experience and define the direct and indirect impacts of climate change on workers, now and in line with climate trajectories over the next 20 years. The impacts in scope include both direct impact on the worker and broader impacts on the community and may be identified through literature review and stakeholder consultation.	Quarter 4 2025	DCCEEW - BCS

Theme 4: Expand knowledge

Action	Rationale	Due	Responsible agency
29. Investigate the economic and fiscal impacts of climate change on the NSW economy and NSW Government, including exposure to climate change risks, opportunities and the related implications for the state's long-term fiscal outlook.	It is important to understand the fiscal and economic impact of climate change on the NSW economy and NSW Government, so it can be considered in the state's long-term planning. NSW Treasury has published an indicative assessment of 4 key areas of climate change risk and the broader energy transition for the 2021-22 NSW Intergenerational Report. This action will build and expand on this work.	Quarter 4 2026	NSW Treasury
30. Continue to prioritise the collection and provision of data and information through the NSW Coastal and Flood Data Network, to assist with identifying and managing risks from coastal and flood hazards and improve our understanding of climate change risks.	The collection and provision of real-time data and information is important to support councils and communities to understand and manage coastal and flood risks in a changing climate. Data collection is essential in warning communities of flood threats and in emergency management for floods across NSW.	Ongoing	DCCEEW - BCS
31. Continue to monitor, report and forecast changing seasonal conditions for primary industries to enhance productive capacity.	Unlike other natural disasters such as bush fires and floods, droughts are prolonged events with creeping starts and therefore are responded to differently by government support programs. The Department of Primary Industries and Regional Development has implemented and maintains a near-real-time drought monitoring system. The Enhanced Drought Information System is a multi-indicator framework that analyses rainfall, soil water and pasture growth to monitor drought conditions across NSW. This service is an important source of information that informs policy and government response to changing seasonal conditions.	Ongoing	DPIRD

Theme 4: Expand knowledge

Action	Rationale	Due	Responsible agency
32. Undertake vulnerability assessments and adaptation actions for marine estate assets.	Developing adaptation plans for managing assets within the marine estate requires understanding vulnerability to climate stressors. This project will conduct multi-criteria vulnerability assessments on key species and habitats that underpin values of the NSW marine estate. With additional funding, this work could inform the development of adaptation plans for marine managers and stakeholders.	Ongoing	DPIRD
33. Increase understanding of climate change impacts on the NSW marine estate and build knowledge and capacity of coastal and marine managers and the community in strategic adaptation planning and management.	With the effects of climate change expected to increase over time, it is important to develop our understanding and knowledge of how climate change will affect the marine estate and key marine assets in NSW. New knowledge generated under Initiative 3 of the Marine Estate Management Strategy will inform state coastal reforms and help guide future government and community adaptation management actions. With additional funding, the strategies could be refined and further detailed.	2028	DPIRD
34. Enhance understanding of biosecurity threats to primary industries under climate change and provide options for response and adaptation.	Climate change impacts biosecurity risks and events. Changes to environment conditions can make threat establishment easier in some cases and limited in others. Gaining a better understanding of biosecurity threats, both existing and new, under climate change scenarios improves both preparedness for incursions and our response capacity and options for management. This proactive approach reduces the incidence and magnitude of biosecurity incursions, improves the effectiveness of treatments, and minimises costs to industry and government. The level of activity in relation to this action can be scaled-up with investment.	Ongoing	DPIRD

Adaptation case study

Gondwana World Heritage climate change adaptation project

The Gondwana Rainforest is a World Heritage listed area in northern NSW with exceptional biological diversity.

Climate change has been identified as the highest level of threat to the site's species and ecological communities. This project is helping protect species by using climate change modelling and other key scientific information to identify areas where species have a chance of survival under climate change and creating new populations in those places. Evaluation from this showcase project will inform further climate change adaptation planning and management across NSW.

Communicate

There are some climate change impacts and risks that every person in NSW may need to consider, factor into decisions and adapt to.

Enabling people to take proactive action themselves requires the NSW Government to communicate known climate change impacts and risks. For example, accessible and clear information will allow NSW residents to make informed decisions about protecting themselves and their families against severe weather events.

Theme 5: Communicate

Action	Rationale	Due	Responsible agency
35. Communicate the climate change impacts and risks for human health with the public. This includes public health messaging on severe weather events (e.g. heatwaves) and reporting on the population health impact of heat.	Climate change impacts pose a risk to population health and health service delivery. Communication on climate change and health will educate the public on the risks, supporting them to prepare for and respond to climate change impacts safely and effectively.	Ongoing	NSW Health
36. Release and communicate the Reef Adapt webtool to provide stakeholders, community groups and restoration practitioners with the tools to climate-proof restoration and aquaculture actions.	Restoration is emerging as a key tool to recover degraded marine habitats and species, but its success may be limited under climate change. This accessible tool enables these activities to be "climate-proofed" by guiding provenance and translocation decisions aimed at boosting resilience against climate change.	Quarter 1 2025	DPIRD
37. Release detailed Department of Primary Industries and Regional Development vulnerability assessment reports for each industry investigated and engage with related industry bodies.	The Department of Primary Industries and Regional Development has completed vulnerability assessments for 28 commodities and 14 biosecurity risks (DPI 2024). Detailed reports for each assessment will be released to support industry understanding of climate change risks and opportunities, and to inform consideration of adaptation strategies. Engagement strategies with key industry bodies will help ensure an industry understands their commodity and biosecurity risk exposure and possible adaptation options. Successful adaptation will support food production and economic prosperity into the future.	Quarter 1 2025	DPIRD

Explore new opportunities

Adaptation is still an emerging area globally, with best practice adaptation policies and programs still being defined.

Adaptation is often most effective when tailored to a specific place or issue. Further work is needed to investigate, research, and analyse different adaptation options for specific issues in NSW. This process will help identify new actions that maximise benefits for the NSW community and help prioritise investment of limited government resources in the most valuable actions.

Theme 6: Explore new opportunities

Action	Rationale	Due	Responsible agency
38. Investigate additional mechanisms and incentives that facilitate climate change risk management, adaptation and building resilience in areas impacted by flood and coastal hazards.	Climate change and rising sea levels are increasing the incidence of coastal hazards, with many areas at greater risk of tidal inundation, coastal erosion, and shoreline recession. Climate change is also likely to increase significant rainfall events and increase flood risk to NSW communities. Adapting to these circumstances requires an expanding range of actions across government.	Quarter 4 2025	DCCEEW - BCS
39. Identify opportunities for the NSW planning system to support enhancement of green infrastructure.	Extending and enhancing green infrastructure is key to adapting to the effects of climate change, particularly increased urban heat. In addition to essential urban cooling benefits, green infrastructure provides a suite of co-benefits for local amenity, accessibility, walkability, mental and physical health, and urban biodiversity. The planning system plays an important role in supporting the enhancement of green infrastructure through strategic and statutory processes and best practice guidance.	Ongoing	DPHI - Planning
40. Scope opportunities to mainstream or embed considerations of climate change adaptation into the NSW Government's fiscal and economic decision-making.	Mainstreaming or embedding climate considerations into government decision-making (e.g. through policy guidance or key decision-making processes) is consistent with recommended practices including the International Monetary Fund's guidance on green public financial management. The NSW Government will continue to embed consideration of climate related risks and opportunities into fiscal and economic decision-making.	Quarter 4 2026	NSW Treasury
41. Work with industry on adaptation options in response to identified agricultural, horticultural, forestry, fisheries and biosecurity related climate change vulnerabilities.	Responding to identified climate change vulnerabilities for primary industries, adaptation options need to be assessed to ensure they are appropriate and effective for the NSW context. There is a risk of maladaptation in the absence of sound evidence driven options for industry to adopt and implement. Maladaptation can impact food security and economic prosperity in rural and regional NSW. This action will support adapting and building climate resilience in primary industries and will support food, fiber and timber production into the future. The level of activity in relation to this action can be scaled up with investment.	Ongoing	DPIRD

Adaptation case study

Wagonga Inlet Living Shoreline project

Oyster reefs in Australia were once as extensive as the Great Barrier Reef. This project is helping to restore these complex ecosystems and the benefits they provide to NSW's coastal communities.

As sea levels rise and storms become more severe, oyster reefs provide natural coastal protection by reducing wave energy, stabilising shorelines, and buffering other more sensitive coastal habitats. Oyster reefs also grow in height as sea levels rise, keeping pace with change over time.

Oyster reefs that were once plentiful in NSW have been decimated by a deadly combination of historical over-harvesting, oyster disease and water pollution. Today, an estimated 95% of Australia's oyster reefs are functionally extinct.

At Wagonga Inlet, in the south coast town of Narooma, more than 2,700m^2 of oyster reef has been created. Creating these oyster reefs demonstrates how nature-based solutions can help coast communities adapt to climate change, with the added benefits of restoring habitat, improving water quality and improving the coastal environment for the community.

Adaptation case study

Primary Industries Climate Vulnerability Assessment – shade netting for cherries pilot project

The NSW Department of Primary Industries and Regional Development conducted a series of sector-focussed climate change vulnerability assessments to determine the potential impacts of climate change on 28 important commodities and 14 key agricultural biosecurity risks.

The assessments covered extensive livestock, broadacre cropping, horticulture, viticulture, forestry, and marine fisheries in NSW and highlighted a range of challenges and opportunities under future climate change in NSW to around 2050.

With this initial assessment of potential climate change impacts complete, attention turned to the effectiveness of potential adaptation actions. The assessments identified climate change risks to some high value horticulture industries and sought to assess the effectiveness of potential adaptation responses. In this pilot, shade netting for cherries was selected because heat impacts on cherry quality during the harvest phase and this was identified as an issue in the assessment.

Shade netting has the potential to reduce in-canopy temperatures but requires significant investment and carries risks of unintended consequences if not evaluated carefully.

The trial involved installing netting and sensors to monitor the impacts of the nets on cherry orchards. The sensors have been assessing the impact of the shade nets on higher temperatures during harvest. They are also providing data on changes in airflow and how that might influence disease risk or honeybee activity. The data generated through this trial will be integrated with the climate change vulnerability modelling and applied across NSW to provide clear insights into the value of shade netting for addressing climate change impacts, including accounting for any side effects.

Enhance existing initiatives

Taking climate change risks and adaptation into account when implementing current initiatives is an important step toward mainstreaming adaptation.

Applying a climate change risk and adaptation lens when projects are underway, not just in the planning phase, helps ensure adaptation continues throughout the life of an activity. Current activities can also have multiple purposes. While an activity may not have been designed for the primary purpose of adaptation, it can be a key contributor to adaptation and resilience.

This plan highlights select initiatives that are already underway within the NSW Government to showcase agencies that are championing adaptation during the implementation of existing initiatives.

Theme 7: Enhance existing initiatives

Action	Rationale	Due	Responsible agency
42. Continue to implement the NSW Coastal Management Framework and Program and the NSW Flood Risk Framework and Floodplain Management Program to identify and manage climate change risks to our communities from coastal and flood hazards.	The NSW Coastal Management Framework and Program and the NSW Flood Risk Framework and Floodplain Management Program provide a contemporary policy setting that enables coastal and flood risks to be managed and community resilience to natural hazards enhanced in consideration of climate change.	Ongoing	DCCEEW - BCS
43. Work with other state agencies and local government to drive strategic implementation of greater Sydney's blue-green grid.	Greater Sydney's blue-green grid aims to connect high-quality green areas with coasts and waterways, public spaces, active transport networks and residential areas. The grid has nature-positive objectives to increase connections between areas of habitat and support climate change adaptation of local species. It also aims to support new and better connections for walking and cycling, particularly in a hotter climate.	Ongoing	DPHI - Planning

Theme 7: Enhance existing initiatives

Action	Rationale	Due	Responsible agency
44. Increase resilience and adaptation to climate change induced air quality and health impacts and risks by implementing initiatives in the NSW Clean Air Strategy under its priorities for 'Better preparedness for pollution events' and 'Better places'.	The impacts of climate change have been shown to increase the frequency and severity of fires and other natural pollution events. Climate change–related atmospheric warming can also potentially increase ground-level ozone, which may affect air quality in some areas. Implementing initiatives under NSW Clean Air Strategy priorities will enable the NSW Government to: • enhance the NSW air quality monitoring network and data • improve how we manage and communicate air pollution and health information • engage with ongoing research into the health impacts of smoke from landscape fires (including immediate and long-term impacts) on vulnerable groups and the broader population • improve evidence on air pollution and its impacts on local communities, including in NSW regions and hotspots (e.g. increasing roadside monitoring) • integrate air quality considerations systematically into strategies, plans, policies and guidelines for creating healthy and liveable places • make places more resilient to air quality impacts from population growth and changing climate • investigate opportunities to improve the built environment to increase sustainability and resilience to air impacts from extreme events.	Ongoing	DCCEEW - BCS

Theme 7: Enhance existing initiatives

Action	Rationale	Due	Responsible agency
45. Increase resilience of the visitor economy industry through implementing actions under the NSW Visitor Economy Strategy 2030.	The tourism industry in NSW is vulnerable to climate change risks, particularly due to its reliance on nature-based attractions and seasonal visitation. The NSW Visitor Economy Strategy 2030 outlines key initiatives to support adaptation across the tourism sector, which include: • implementing needs-based industry development programs to facilitate the digital transformation of visitor economy businesses, enhance the quality of visitor experiences, and ensure the sustainability and resilience of visitor economy businesses • providing toolkits, advice, and support to help businesses become more resilient and sustainable, to adopt environmentally friendly practices and adapt to climate change • considering the ongoing financial viability and contribution to a sustainable and resilient visitor economy during prioritisation and decision-making.	Ongoing	Destination NSW
46. Continue work to understand and predict the risks and opportunities that climate change brings to primary industries. Support primary industries to adapt to climate change, increased climate variability and extreme events through new technologies, management practices and production systems to maintain food and fibre production systems.	Climate change directly impacts the primary industries that regional communities and beyond depend upon. There is a need to continue improving our understanding of the regional changes in climate (particularly changes to natural hazards), the impacts of these changes and the effectiveness of responses. The adoption of agricultural technology can improve on-ground monitoring of production and environmental conditions and support adaptive responses in primary industries. The level of activity in relation to this action can be scaled-up with investment and support resilient regional communities and the industries that support them.	Ongoing	DPIRD

Adaptation case study

The NSW Marine Estate Management Strategy – planning for a changing climate

The Marine Estate Management Strategy (MEMS) is the centrepiece of the NSW marine reform program which establishes an overarching framework for coordinated management of the states' estuaries, coastline, and marine waters (the NSW marine estate).

The NSW Government is investing $286.6 million over the life of the strategy (2018-2027) to implement over 100 projects through 9 initiatives. Specifically, Initiative 3, 'Planning for climate change' serves to increase understanding and knowledge of how climate change will affect the marine estate through monitoring, research, and modelling.

This knowledge will be translated into policy and guidelines to assist marine managers, communities, and industries in developing adaptation responses and identifying opportunities to mitigate climate change impacts.

Appendix A - Table of actions

Theme 1: Advance policy

Action	Due	Responsible agency
1. Review the land-use planning framework to better embed climate change risk and adaptation considerations, including for urban heat, flooding, bush fire and coastal hazards.	Ongoing	DPHI – Planning
2. Develop a landscape restoration framework for NSW as part of the NSW plan for nature.	Q2 2025	DCCEEW – BCS
3. Publish the Saving our Species Key Threatening Process Strategy for Anthropogenic Climate Change.	Q2 2026	DCCEEW – BCS
4. Review the NSW framework for managing coastal hazards under the *Coastal Management Act 2016* to assess if it is achieving its objectives in relation to responding to current and future coastal hazards under climate change.	Q4 2028	DCCEEW -BCS
5. Analyse how government can better support natural environment adaptation in the implementation of the NSW plan for nature.	Ongoing	DCCEEW – BCS
6. Ensure water strategies, policies, and regulations (including water allocation and sharing) consider climate change impacts and risks.	Ongoing	DCCEEW – Water
7. Improve integration of drought and incident management planning in response to climate change, ensuring preparedness and capability are maintained.	Ongoing	DCCEEW – Water
8. Update long-term water plans to include consideration of climate change impacts and risks for water for the environment.	Q4 2025	DCCEEW – BCS
9. Advance the Marine Heatwave Response Plan.	Ongoing	DPIRD
10. Continue to inform and influence policy, legislative, and compliance frameworks for primary industries' outcomes in climate change adaptation.	Ongoing	DPIRD

Theme 2: Build capability

Action	Due	Responsible agency
11. Continue to support government entities to build their capability to identify, assess, manage, disclose and monitor climate change related impacts and risks on their assets, decision-making and service delivery.	Q1 2025	DCCEEW – ECCS
12. Implement education and capability building programs for planners, agency and consent authority staff to promote climate change risk management in planning.	Ongoing	DPHI – Planning
13. Establish capability to support the development of co-designed climate change adaptation measures with and for Aboriginal communities in NSW. This will include forming and continuing effective partnerships on climate change adaptation with Aboriginal communities, their organisations and key stakeholders across NSW Government. It will also include enabling place-based caring for Country initiatives that promote and support well adapted and healthy communities and Country across the cultural landscape.	Q2 2026	DCCEEW – ECCS
14. Develop training on climate change adaptation and mitigation, including health impacts of climate change, such as mental health, to guide the implementation of adaptation actions across the healthcare system.	Q1 2027	NSW Health
15. Develop guidance and/or tools to support NSW Health organisations to identify and assess risks to supply chain, infrastructure, and service delivery to guide the implementation of adaptation actions across the healthcare system.	Q1 2027	NSW Health
16. Ensure transport projects and operations consider climate change risks by updating Transport for NSW's project risk assessment guidelines, incorporating minimum risk assessment and adaptation planning requirements, and clear thresholds of application.	Q1 2025	TfNSW
17. Develop guidance for industry and councils to support delivery of increased green infrastructure and cooler places.	Ongoing	DPHI – Planning
18. Continue to work with primary producers and industry groups that support them to build understanding of changing climatic conditions and climatic vulnerabilities and how they can adapt to be more resilient.	Ongoing	DPIRD
19. Develop guidelines to enable robust and sustainable management decisions around climate-proofing freshwater and marine restoration and management.	Q1 2025	DPIRD

Theme 3: Improve processes

Action	Due	Responsible agency
20. Develop ways of reporting risks consistently across the transport sector.	Q4 2025	TfNSW
21. Ensure water utilities and water infrastructure owners use a systems approach to assess and address climate change risk.	Ongoing	DCCEEW – Water

Theme 4: Expand knowledge

Action	Due	Responsible agency
22. Improve and apply our understanding of climate change impacts and risks on water management and the environment, including surface water, ground water, wastewater, stormwater, and water quality.	Ongoing	DCCEEW – Water
23. Update biodiversity resilience and connectivity modelling to inform conservation and planning decision-making.	Q4 2025	DCCEEW – BCS
24. Undertake research and monitoring to rapidly detect changes to fire risks in ecosystems.	Q4 2026	DCCEEW – BCS
25. a. Provide integrated, quantitative bush fire risk estimation (current and future) as part of bush fire risk modelling.	Q4 2026	NSW RFS
25. b. Provide quantitative bush fire risk estimation for environmental and Aboriginal cultural values (current and future) as part of bush fire risk modelling.	Q4 2026	DCCEEW – BCS
26. Establish research and monitoring to underpin adaptation and restoration strategies that help mitigate the impacts of climate change on the marine species protected under the *Biodiversity Conservation Act 2016*.	Q4 2028	DCCEEW – BCS
27. Investigate the impacts and risks of the changing climate on the power system, including consumer demand, generation and network availability and the implications this has for NSW's electricity market and the net zero energy transition.	Q2 2025	DCCEEW – ECCS

Theme 4: Expand knowledge

Action	Due	Responsible agency
28. Undertake social research into the impact of climate change on NSW workers.	Q4 2025	DCCEEW – BCS
29. Investigate the economic and fiscal impacts of climate change on the NSW economy and NSW Government, including exposure to climate change risks, opportunities and the related implications for the state's long-term fiscal outlook.	Q4 2026	NSW Treasury
30. Continue to prioritise the collection and provision of data and information through the NSW Coastal and Flood Data Network, to assist with identifying and managing risks from coastal and flood hazards and improve our understanding of climate change risks.	Ongoing	DCCEEW – BCS
31. Continue to monitor, report and forecast changing seasonal conditions for primary industries to enhance productive capacity.	Ongoing	DPIRD
32. Undertake vulnerability assessments and adaptation actions for marine estate assets.	Ongoing	DPIRD
33. Increase understanding of climate change impacts on the NSW marine estate and build knowledge and capacity of coastal and marine managers and the community in strategic adaptation planning and management.	2028	DPIRD
34. Enhance understanding of biosecurity threats to primary industries under climate change and provide options for response and adaptation.	Ongoing	DPIRD

Theme 5: Communicate

Action	Due	Responsible agency
35. Communicate the climate change impacts and risks for human health with the public. This includes public health messaging on severe weather events (e.g. heatwaves) and reporting on the population health impact of heat.	Ongoing	NSW Health
36. Release and communicate the Reef Adapt webtool to provide stakeholders, community groups and restoration practitioners with the tools to climate-proof restoration and aquaculture actions.	Q1 2025	DPIRD
37. Release detailed Department of Primary Industries and Regional Development vulnerability assessment reports for each industry investigated and engage with related industry bodies.	Q1 2025	DPIRD

Theme 6: Explore new opportunities

Action	Due	Responsible agency
38. Investigate additional mechanisms and incentives that facilitate climate change risk management, adaptation and building resilience in areas impacted by flood and coastal hazards.	Q4 2025	DCCEEW – BCS
39. Identify opportunities for the NSW planning system to support enhancement of green infrastructure.	Ongoing	DPHI – Planning
40. Scope opportunities to mainstream or embed considerations of climate change adaptation into the NSW Government's fiscal and economic decision-making.	Q4 2026	NSW Treasury
41. Work with industry on adaptation options in response to identified agricultural, horticultural, forestry, fisheries and biosecurity related climate change vulnerabilities.	Ongoing	DPIRD

Theme 7: Enhance existing initiatives

Action	Due	Responsible agency
42. Continue to implement the NSW Coastal Management Framework and Program and the NSW Flood Risk Framework and Floodplain Management Program to identify and manage climate change risks to our communities from coastal and flood hazards.	Ongoing	DCCEEW – BCS
43. Work with other state agencies and local government to drive strategic implementation of greater Sydney's blue-green grid.	Ongoing	DPHI – Planning
44. Increase resilience and adaptation to climate change induced air quality and health impacts and risks by implementing initiatives in the NSW Clean Air Strategy under its priorities for 'Better preparedness for pollution events' and 'Better places'.	Ongoing	DCCEEW – BCS
45. Increase resilience of the visitor economy industry through implementing actions under the NSW Visitor Economy Strategy 2030.	Ongoing	Destination NSW
46. Continue work to understand and predict the risks and opportunities that climate change brings to primary industries. Support primary industries to adapt to climate change, increased climate variability and extreme events through new technologies, management practices and production systems to maintain food and fibre production systems.	Ongoing	DPIRD

Appendix B - Climate Change (Net Zero Future) Act 2023 Guiding principles

- There is a critical need to act to address climate change, which is a serious threat to the social, economic and environmental wellbeing of New South Wales.
- Action to address climate change should be taken as early as possible to minimise the cost and adverse impacts of climate change.
- Action to address climate change should be taken in a way that—

  a. is fiscally responsible, and
  b. promotes sustainable economic growth, and
  c. considers the economic risks of delaying action to address climate change, and
  d. considers the impact on rural, regional, and remote communities in New South Wales.

- Action to address climate change should be consistent with the right to a clean, healthy and sustainable environment.
- Action to address climate change should be consistent with the principles of ecologically sustainable development described in the *Protection of the Environment Administration Act 1991*, section 6(2).
- Action to address climate change should involve appropriate consultation with affected persons, communities and stakeholders.
- Action to address climate change should take into account the following—

  a. the knowledge and perspectives of Aboriginal communities,
  b. the best available science,
  c. the knowledge of rural, regional and remote communities in New South Wales,
  d. the need to support local communities, including Aboriginal communities, who may be affected by the action, including by—

     i. considering the impact on local employment and industries, and
     ii. diversifying local economies, and
     iii. encouraging local procurement, and
     iv. optimising job creation and employment transition opportunities, and
     v. considering the impact on the amenity of local communities,

  e. the need for education and skills diversification,
  f. the need to ensure essential utilities and infrastructure are provided, including energy, water, telecommunications and transport,
  g. the impact of the action on consumer costs in New South Wales, including energy costs,
  h. the need to reduce the risk climate change poses to human health,
  i. equity and social justice impacts on socially disadvantaged groups and economically vulnerable regions,
  j. the need to reduce the risk climate change poses to the survival of all species.

- Action to address climate change should take into account the impact on animals.
- The Government of New South Wales is responsible for—

  a. urgently developing and implementing strategies, policies and programs to address climate change, and
  b. ensuring the Government of New South Wales pursues best practice in addressing climate change.

References

Australian Institute for Disaster Resilience (AIDR) (2020) **Major Incidents Report 2019–20: An overview of major incidents that have involved the fire and emergency services sector from July 2019 to June 2020**, Department of Home Affairs, Australian Government.

***Climate Change (Net Zero Future) Act 2023 (NSW)* No 48**

***Coastal Management Act 2016 (NSW)* No 20**

Coates L, Haynes K, O'Brien J, McAneney J and de Oliveira FD (2014) 'Exploring 167 years of vulnerability: An examination of extreme heat events in Australia 1844–2010', *Environmental Science & Policy*, 42:33–44.

CSIRO (Commonwealth Scientific and Industrial Research Organisation) (2020) **Climate and disaster resilience technical report**, Commonwealth Scientific and Industrial Research Organisation.

DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2024) **NSW Biodiversity Outlook Report 2024, Status and trends of biodiversity and ecological integrity**, New South Wales Government.

DELWP (Department of Environment, Land, Water and Planning) (2016). **National Recovery Plan for the Mountain Pygmy-possum Burramys Parvus**, Australian Government.

DPE (Department of Planning and Environment) (2022) **NSW Koala Strategy, Towards doubling the number of koalas by 2050**, New South Wales Government.

DPI (Department of Primary Industries) (2024) **Climate Vulnerability Assessment Summary Report**, New South Wales Government.

DPIE (Department of Planning, Industry and Environment) (2021) **NSW Water Strategy**, New South Wales Government.

Drielsma M, Love J, Williams K, Manion G, Saremi H, Harwood T, Robb J (2017) 'Bridging the gap between climate science and regional-scale biodiversity conservation in south-eastern Australia', Ecological Modelling, 360:342-362.

EPA (Environment Protection Authority) (2021) **NSW State of the Environment 2021**, New South Wales Government.

Global Commission on Adaptation (2019) **Adapt Now: A Global Call for Leadership on Climate Resilience**, Global Commission on Adaptation.

Infrastructure Australia (2020) **Infrastructure Priority List**, Australian Government.

IPCC (Intergovernmental Panel on Climate Change) (2018) **Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty**, United Nations Intergovernmental Panel on Climate Change.

IPCC (2021a) **Climate Change 2021: The Physical Science Basis**, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, United Nations Intergovernmental Panel on Climate Change.

IPCC (2021b) **The concept of risk in the IPCC Sixth Assessment Report: a summary of cross Working Group discussions**, United Nations Intergovernmental Panel on Climate Change.

IPCC (2022) **Climate Change 2022: Impacts, Adaptation, and Vulnerability**, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, United Nations Intergovernmental Panel on Climate Change.

IPCC (23 March 2023) ***Urgent climate action can secure a liveable future for all*** [media release], United Nations Intergovernmental Panel on Climate Change, accessed 3 May 2024.

Khan H, Santamouris M, Kassomenos P, Riccardo P, Caccetta P, Petrou I. (2021) **Spatiotemporal variation in urban overheating magnitude and its association with synoptic air-masses in a coastal city**. Scientific Reports 11, 6762.

Klein A (16 March 2022), '**Australia's Japanese encephalitis outbreak blamed on climate change**', New Scientist, accessed 15 June 2024.

NSW Government, AdaptNSW case studies **(How do we secure the survival of our rare rainforest trees for centuries to come?, Building adaptive capacity to heat in Western Sydney, Learning from Loving Country, Wagonga Inlet Living Shoreline project, Developing resilient cities based on locally relevant data, Climate resilient farming with Indigenous knowledge**, accessed June 2024, New South Wales Government.

NSW Government (2022) **NSW Climate Change Adaptation Strategy**, New South Wales Government.

NSW Premier & Cabinet (2020) **Final Report of the NSW Bushfire Inquiry**, New South Wales Government.

NSWRA (NSW Reconstruction Authority) (2024) **NSW State Disaster Mitigation Plan 2024-2026**, New South Wales Government.

NSW Treasury (2021) **2021-22 NSW Intergenerational Report**, New South Wales Government.

OEH (Office of Environment and Heritage) (2016) **NSW Climate Change Policy Framework**, New South Wales Government.

Parise I (2018) **'A brief review of global climate change and the public health consequences'**, Australian Journal of General Practice, 47(7):453.

Standen JC, Spencer J, Lee GW, Van Buskirk J, Matthews V, Hanigan I, Boylan S, Jegasothy E, Breth-Petersen M, Morgan (2022) **'Aboriginal Population and Climate Change in Australia: Implications for Health and Adaptation Planning'**, International Journal of Environmental Research and Public Health, 19(12):7502.

UNFCCC (United Nations Framework Convention on Climate Change) (2015) **The Paris Agreement**, United Nations Framework Convention on Climate Change.

UNGA (United Nations General Assembly) (2022) **The human right to a clean, healthy and sustainable environment : resolution / adopted by the General Assembly**, United Nations General Assembly.

UNODRR (United Nations Office for Disaster Risk Reduction) (2015) **Sendai Framework for Disaster Risk Reduction 2015-2030**, United Nations Office for Disaster Risk Reduction.

UNODRR (2020) **The Human Cost of Disasters 2000-2019**, Centre for Research on the Epidemiology of Disasters.

Vicedo-Cabrera AM, Scovronick, N, Sera, F et al. (2021) **'The burden of heat-related mortality attributable to recent human-induced climate change'**, Nature climate change, 11(6):492–500.

Wood N, Beauman M and Adams P (2021) **Intergenerational Report Treasury Technical Research Paper Series 1, An indicative assessment of four key areas of climate risk for the 2021 NSW Intergenerational Report**.

World Resources Institute (2018) **From Planning to Action: Mainstreaming Climate Change Adaptation into Development**, World Resources Institute.

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