NSW Treasury

Resilience

TPG24-29 NSW Government Business Case Guidelines — Technical Note

November 2024

NSW GOVERNMENT

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

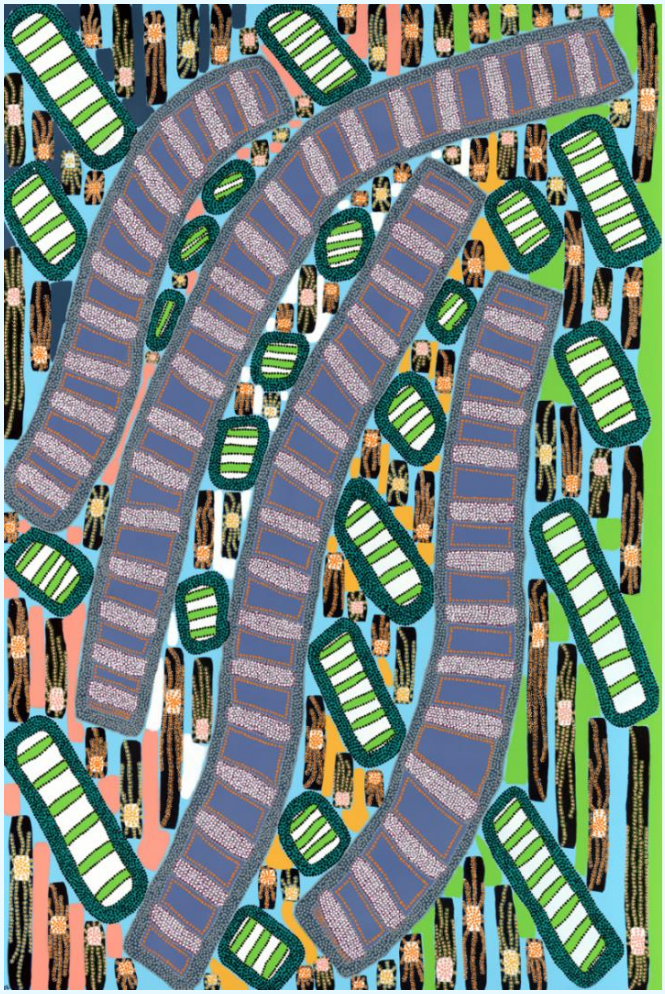
We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices, and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork:
Regeneration by Josie Rose



Contents

Revision history				
Document version number	Approval date	Author	Approver	Description

Abstract

Business Case Guidelines Technical note: Resilience	
Background	Resilience is the ability of a system to resist, absorb, accommodate, recover, transform and thrive in a timely, effective manner in response to the effects of stressors and shocks. All initiatives can be impacted by stresses and shocks. Considering resilience as part of business case development can support better decision-making and enhance the welfare of the community.
Scope	*TPG24-29 NSW Government Business Case Guidelines* establishes mandatory requirements and guidance to assist agencies prepare business cases. This note provides supplementary guidance to support consideration of resilience as part of a business case.
When to use this technical note?	Use this note when developing a business case for capital, recurrent or digital initiatives. Thinking about resilience can improve business cases of any type or size, but detailed analysis is only needed if impacts of stressors and shocks are material.
Potential implications	Identify stressors and shocks and incorporate into analysis of costs, benefits, risks and strategic context.
Associated resources	TPG24-29 NSW Government Business Case Guidelines (Business Case Guidelines) TPG23-08 NSW Government Guide to Cost-Benefit Analysis (CBA Guidelines) TPG23-17 Disaster Cost-Benefit Framework (Disaster Cost-Benefit Framework)

1 Background

Key points

- Thinking about resilience can improve your business case and support better decision-making.
- Building resilience reduces or avoids costs imposed by stressors and shocks.
- All types and sizes of initiatives can be impacted by stresses and shocks and should consider resilience.

1.1 Why does resilience matter?

Resilience affects how an initiative impacts community welfare and its costs, risks and benefits.

Building resilience reduces or avoids the costs of stressors and shocks. For example, governments and commuters incur repair costs and longer travel times when a road is damage by floods. These costs could be reduced or avoided if the road was located away from flood zones or had improved culverts and drainage.

Building resilience can also have broader benefits. For example, a road that is more resilient to flooding might last longer and be able to accommodate heavier vehicles.

Considering resilience can make a business case better by ensuring the right options are identified, risks are identified and managed, and costs, benefits and risks are accurately reflected in the cost-benefit analysis (CBA) and financial analysis.

What do we mean by resilience, stressors and shocks?

Resilience refers to the ability of a system to resist, absorb, accommodate, recover, transform and thrive in a timely, effective manner in response to the effects of shocks and stressors to enable positive economic, social and environmental outcomes. For example, a resilient railway network will recover quickly after a track incident or delay, while a resilient hospital can deal with the effects of a pandemic or other major health event.

Shocks refer to sudden acute events with a damaging impact, such as cyber-attacks, extreme storms or flooding.

Stressors refer to chronic long-term or cyclical trends that undermine systems and increase their exposure and vulnerability, such as increasing temperature or an ageing population.

Table 1: Example stressors and shocks

Shocks	Stressors
• Disease pandemic • Cyber attack • Bushfires • Extreme weather events (including extreme heat, storm events, flooding) • Water crisis (such as pollution hindering potable supply)	• Demographic change • Breakdown of social cohesion and social exclusion. • Coastal erosion, including sea level rise and tidal inundation.

- Financial institution or system failure
- War
- Terrorist attacks
- Power outages
- Significant institutional changes

- Climatic shifts (such as higher temperatures or changed rainfall patterns)
- Housing affordability
- Species extinction
- Loss of vegetation

Climate change

Climate change has already impacted NSW and is expected to continue to pose new, and exacerbate existing, stressors and shocks. For example:

- Increased frequency, duration and severity of some natural hazards. Even small changes in average climate can have significant impacts.
- Exacerbating other existing environmental risks. For example, coastal inundation may exacerbate the impacts of existing soil contamination as contaminates could be mobilised and redistributed to adjoining waterways.
- Impacts on the demand for government services. For example, increased frequency of heatwaves may impact the public demand for health services or the need for greater temperature control in schools and other government buildings.

1.2 When should resilience be considered?

All types and sizes of initiatives can be impacted by stresses and shocks and benefit from consideration of resilience.

Resilience initiatives aim to proactively manage or mitigate the impact of stressors and shocks. For example, reforesting open slopes to prevent soil erosion and landslips or upgrading the capacity of culverts and drainage in flood prone areas.

Disaster Cost-Benefit Framework

The Disaster Cost-Benefit Framework sets out how to undertake disaster resilience cost-benefit analysis.

The framework is focussed on floods, however includes principles and methods that can be applied to disasters resulting from any type of natural hazard or resilience initiatives more broadly.

Key recommendations include:

- using Monte Carlo analysis and other methods (such as climate scenarios) to better understand and reflect uncertainty
- considering a variety of options, including preventing losses by avoiding the hazard
- using graphics and narrative to present information on the distribution of expected outcomes alongside expected results.

Other initiatives are impacted by stressors and shocks even though reducing or avoiding stressors and shocks is not the primary aim. For example:

- A new school may be subject to extreme weather events that disrupt learning, reduce safety and increase absenteeism.
- A new digital system may be subject to cyber-attacks that disrupt service delivery.
- Health service capacity may need to plan for increased future demand due to an ageing population.
- A regional hospital may need a plan to ensure access to materials and drinking water if roads are closed due to flooding.

2 How to consider resilience?

Key points

- Consider resilience at each stage of the business case process by incorporating stressors and shocks into options development and analysis of costs, benefits, risks and strategic context.
- Focus on stressors and shocks that are material to the initiative.
- Keep analysis proportionate to the size and scale of the initiative.
- Relevant aspects of the Common Planning Assumptions and NARCliM regional climate projections must be used to inform consideration of resilience. Other resources should supplement the common planning assumptions as necessary.
- Identify the type and scale of stressors and shocks that may impact the initiative and assess exposure and vulnerability.
- Consider redesigning options — or developing new options — that increase resilience to material stressors and shocks.
- Benefits and costs from stressors and shocks should be clearly identified and included in the set of costs and benefits quantified where material to final results.

2.1 How does resilience fit into the business case process?

Consider resilience at each stage of the business case process by incorporating the impact[1] of stressors and shocks into analysis. This should include as relevant:

- Include risks from stressors and shocks in the risk analysis.
- Reflect costs and benefits of stressors and shocks in CBA and financial analysis central estimates where material to the results.
- Test how changes in assumptions or parameters associated with stressors and shocks impact results as part of sensitivity analysis.
- Redesign options or develop new options to increase resilience to material stressors and shocks.
- Consider alignment with government priorities, policies or commitments related to resilience (refer to **Error! Reference source not found.** for a non-exhaustive list), where of interest to d ecision-makers.

Focus on material stressors and shocks that are specific and relevant. Provide evidence that they are likely to have an impact on decision making, for example through risk assessments, infrastructure assessments or disaster adaptation plans. Material stressors and shocks are those that:

- create intolerable risk[2]

[1] The level of resilience to stressors and shocks will affect the impact.

[2] Risk tolerance refers to the readiness to bear risk. Refer to section 3.5 of the Business Case Guidelines for further information.

- may materially affect benefits or costs[3]
- may result in intended benefits not being delivered
- are of interest to decision-makers.

Keep analysis proportionate to the cost and risk of the initiative and collaborate with experts.

Challenges of considering resilience

- The frequency and impact of stressors and shocks is uncertain.
- Climate change has reduced the reliability of historical data in anticipating the frequency and impacts of some stressors and shocks, such as disasters caused by natural hazards.
- Stressors and shocks can be multiple and overlapping, creating interacting, compounding and cascading impacts.

2.2 Data Sources

Business cases must incorporate relevant aspects of the NSW Common Planning Assumptions (see section 2.9 of the Business Case Guidelines). The Common Planning Assumptions reflect common stressors and shocks including demographic changes and the impact of climate change.

Other relevant sources, including those identified in this technical note, may supplement the common planning assumptions as necessary. When choosing sources:

- Rely on NSW Government sources when available, followed by outside sources to fill in any gaps.
- Ensure the information is suitable and the best available source.
- Check that the information is up to date.

2.3 Identify and analyse material stressors and shocks

Identifying and analysing material stressors and shocks requires an understanding of:

1. **Stressors and shocks:** Determine the type and scale of stressors and shocks that may impact the initiative and estimate their frequency and intensity.
2. **Exposure:** Identify potential loss, degradation or disruption when the identified stressors and shocks occur.
3. **Vulnerability:** Determine what characteristics or circumstances make the initiative susceptible to damage or disruption.

Identify relevant stressors and shocks early in the business case process:

- Review initiative, agency or location-specific information (such as climate risk assessments, the State Disaster Mitigation Plan and disaster adaptation plans).
- Complete desktop research.
- Consult with government agencies, other stakeholders and subject matter experts.

[3] Consider the risk value where consequence and likelihood can be quantified

More detailed analysis should examine exposure and vulnerability if the initiative may be materially impacted by stressors and shocks.

Indicators of material stressors and shocks

- May be impacted by natural hazards, such as bushfires, floods or storms
- Related to the natural environment such as freshwater, marine coastal habitats or woodland
- May be impacted by demographic shifts such as a rapidly growing, declining or ageing population
- Is reliant on natural resources
- Requires handling of sensitive or confidential data
- Is associated with infrastructure that supports critical services such as energy, food, water, transport and communications
- Is affected by weather or climate conditions
- 'Locks-in' a particular solution
- Long life span
- Supply-chain vulnerability.

Related assets, services or communities

Initiatives interact with other assets and services and exist within communities. This includes related assets and services owned by the NSW Government, local government or private parties. They may:

- be part of an interconnected network of assets or services. For example, state roads often interact with local roads.
- be part of an asset base or portfolio.
- interact with local communities and businesses.

The resilience of related assets, services and communities may impact the resilience of a new initiative. For example, a new digital system that interfaces with an older system that cannot withstand a surge in activity.

A new initiative can also impact the resilience of related assets, services or communities. For example:

- A new road through a flood zone may worsen floods by resulting in water pooling either side of the road.
- Extending a train line may reduce capacity to respond to extreme weather events across the existing network.
- A seawall built to protect coastal communities from sea level rise and storms may trap rainwater and cause localised flood events.

Secondary, compounding, interacting and cascading impacts

Secondary impacts occur as an indirect consequence of an event. For example, poor air quality from bushfire smoke.

Compounding impacts occur when one event precipitates another. For example, when extreme heat culminates in bushfires.

Interacting impacts occur when two or more events together create more severe impacts. For example, beach erosion caused by sea-level rise and storm surge can be worsened by above-normal rainfall, which makes the foreshore more vulnerable to erosion.

Cascading impacts occur when one impact precipitates the next and so on through a system. For example, damage to energy infrastructure leads to telecommunications failures, which then impact on transport systems, banking etc.

Climate risk

The Climate Risk Ready NSW Guide

The Climate Risk Ready NSW Guide outlines the four-step climate change risk assessment process to identify and manage climate change risks to public assets, services and objectives. The process includes consulting relevant projections and identifying and prioritising adaptation actions.

A climate change risk assessment can be completed at the enterprise, program or project level.

A relevant enterprise or program level climate change risk assessment, or a climate change risk assessment completed for a similar proposal, can support the identification and assessment of climate change related stressors and shocks as part of a business case.

It may be useful to complete a climate change risk assessment specifically for the proposal where stressors and shocks related to climate change are material.

Refer to the AdaptNSW website for further information.

Climate change scenarios and projections

Climate change scenarios are estimates of plausible futures as influenced by climate change. They are based on the best available science and assumptions such as:

- future greenhouse gas emissions and aerosol concentrations
- the response of global average surface temperatures to increases in greenhouse gas concentrations
- socioeconomic factors and patterns such as population growth, energy use, technology, trade and economic policy.

One commonly adopted set of climate change scenarios are those defined in the Intergovernmental Panel on Climate Change (IPCC) Assessment reports.

IPCC climate scenarios

IPCC's sixth assessment reports (AR6) use the five climate scenarios shown in the table below.

The SSP-RCP scenarios combine the shared socio-economic pathways (defined in AR6) with representative concentration pathways (RCPs) from the IPCC's fifth assessment reporting period (AR5).

SSP-RCP scenarios[4]	Description	Very likely range in °C (2081 to 2100)

[4] Sometimes referred to as the SSPX-Y scenarios. The X refers to the SSP scenario and the Y refers to the RCP radiative forcing levels. For example SSP1-1.9 is a scenario that combines SSP1 with 1.9 W m-2 radiative forcing in 2100 (RCP1.9).

SSP1-1.9	very low GHG emissions: CO2 emissions cut to net zero around 2050	1.0 to 1.8
SSP1-2.6	low GHG emissions: CO2 emissions cut to net zero around 2075	1.3 to 2.4
SSP2-4.5	intermediate GHG emissions: CO2 emissions around current levels until 2050, then falling but not reaching net zero by 2100	2.1 to 3.5
SSP3-7.0	high GHG emissions: CO2 emissions double by 2100	2.8 to 4.6
SSP5-8.5	very high GHG emissions: CO2 emissions triple by 2075	3.3 to 5.7

Climate change projections estimate how climate variables — such as temperature, humidity, air pressure, wind, solar radiation, soil, moisture and precipitation — could change under climate scenarios.

Climate projections should inform analysis for the base case and each option for initiatives with a lifespan over 10 years that may be materially impacted by climate change. NSW and Australian Regional Climate Modelling (NARCliM) is the primary source for NSW climate projections and should be used for business cases.

It is useful to apply multiple climate scenarios (NARCliM models multiple scenarios from IPCC's sixth assessment reports), noting the IPCC thinks each scenario is equally plausible. A high-emissions scenario should be included for tier 1 or tier 2 initiatives likely to be materially impacted by climate change.

Apply Common Planning Assumptions guidance on what climate scenarios to use. New guidance is expected to be released in late 2024.

NARCliM climate projections

NSW and Australian Regional Climate Modelling (NARCliM) is the primary source for NSW climate projections. Projections are available for NSW, ACT and each region of NSW.

The Regional Climate Change Snapshots and AdaptNSW interactive map show projected changes for multiple future intervals (2020 to 2039, 2050 to 2069, 2070 to 2089).

Some of the most common climate projections used are:

- changes in temperature
- number of hot days and cold nights
- changes in rainfall
- changes in fire weather.

NARCliM 2.0 builds on earlier generations of climate projections, NARCliM 1.0 and 1.5. NARCliM 2.0:

- models for over 100 climate variables including temperature, number of hot days and cold nights, and rainfall

- provides climate projections over south-eastern Australia at 4 km horizontal resolution for 1951 to 2100
- dynamically downscales five Intergovernmental Panel on Climate Change (IPCC) CMIP6 Global Climate Models, using Regional Climate Models (RCMs)
- currently models the climate response to two climate scenarios from IPCC's sixth assessment reports : SSP1-2.6 and SSP3-7.0. Modelling under a third, 'middle of the road scenario' (SSP2-4.5) will be available in 2025.

Refer to NSW Climate Data Portal for further guidance on NARCliM and access to projections data. For more information, contact narclim@environment.nsw.gov.au

Plausible divergent future scenarios

Plausible future scenarios systematically represent possible future conditions. This broad perspective of possible future conditions can help identify and analyse stresses and shocks that might otherwise be missed.

Future scenarios are based on assumptions that reflect key uncertainties, for example the impacts of climate change (see above), population growth, demographic changes and geopolitical instability.

NSW2060 Infrastructure, Transport and Land Use scenarios

The Cabinet Office's Shaping Futures and Data Insights Branch developed a set of plausible divergent futures for use in strategic planning and investment decision making for infrastructure, transport and land use (ITLU).

These plausible futures — referred to as the NSW2060 ITLU scenarios — have been developed using strategic foresight methods. They are articulated as a series of narratives accompanied by scenario variables, speculative data points and projection data sets.

The speculative data points help to illustrate the divergence between the scenarios by directly comparing key variables as well as providing a starting point for quantification.

The projection data sets support quantification and provide insights into system-wide implications of the plausible futures.

Contact shapingfutures@tco.nsw.gov.au for further information and access to the NSW2060 ITLU Scenarios.

2.4 Develop resilience options

Consider redesigning options, or developing new options, to increase resilience (resilience options). Despite their upfront cost, resilience options can increase net benefits or reduce residual risk to an acceptable level.

Resilience options may:

- **Avoid stressors and shocks altogether**. For example, by locating assets or services away from stressors and shocks.
- **Build in adaptive capacity** to ensure assets or services can be modified over time as uncertainties are addressed. Adaptive capacity can also relate to operational efficiency and flexibility. For example, the ability for software updates to make a renewable energy asset operate more efficiently.

- **Build in redundancy** or other features that increase the ability of infrastructure or services to withstand disruption and retain some functionality — rather than failing catastrophically — in the face of a stressor or shock.
- **Improve physical resistance**. For example, by using different materials or nature-based solutions, such as actively managing local ecosystems or introducing biodiversity to protect the built environment.
- **Support more resilient operations**. For example, increasing capability of agencies and staff to respond to shocks and stressors.
- **Manage interdependency**. For example, identifying weak links and interdependencies in infrastructure or modular design that could negatively impact functionality if damaged or disrupted.
- **Better enable response and recovery** to minimise short-term impacts and plan for long-term impacts. For example, erecting evacuation route directional signs across a floodplain to reduce the risk of fatalities and injuries during a flood event, building community awareness, encouraging preparedness behaviours, and fostering community connections.
- **Real options** can provide flexibility for change once uncertainties become clearer. See section 3.2 of the Business Case Guidelines and the CBA Guidelines Appendix 4.4 for guidance on real options.

The policies and strategies listed in **Error! Reference source not found.** provide further guidance on s pecific measures to build resilience.

Case study: Sydney Metro

Climate change resilience is material for the Sydney Metro because it is expected to remain in service for a century.

Sydney Metro Northwest was the first stage of the network to be completed. From the earliest stage of the project, climate risk was considered against three separate time horizons: short (2030), medium (2070) and long-term (2100). Climate change models were used to identify high, medium and low climate risks.

Flooding, heat waves and other extreme weather events were the three most relevant climate risks. In response, the design of the network was adapted to build physical resilience. For example:

- Mission-critical equipment is housed in temperature-controlled rooms that can handle heat waves.
- Ventilation systems in tunnels and stations were engineered to ensure customer comfort would be maintained even on the hottest days.
- Most of the surfaces around the stations and along the tracks are permeable, which means they absorb rainwater and reduce the risk of flooding.

Source: AdaptNSW (November, 2023) 'Sydney Metro rail system: climate resilient transport', AdaptNSW website, accessed 9 May 2024.

Case study: Building resilience in the Hawkesbury-Nepean Valley

The Hawkesbury-Nepean Valley has the highest flood exposure in NSW due to its unique landscape and large existing population. Floods in the valley can have a significant impact on people's lives, livelihoods and homes.

The Flood Evacuation Road Resilience Program aims to enable better responses to flood events by improving the road network, particularly at low points in key locations within the valley, so that residents can evacuate from the area safely.

Improvements include road shoulder widening, new culvert and bridge structures, road raising, pinch point upgrades and drainage improvements.

The Community Resilience Program has supported residents, businesses and other organisations to better withstand and respond to flood events by raising community awareness and embedding preparedness behaviours.

Sources: Infrastructure NSW (July 2024), 'Staying ahead: State Infrastructure Strategy 2022-2042'. accessed 10 August 2024. NSW Reconstruction Authority (February 2024), 'State Disaster Mitigation Plan 2024-2026', accessed 23 July 2024.

2.5 Quantify the impact of stressors and shocks

Stressors and shocks generally impose costs, while resilience creates benefits through avoided or reduced costs over the longer term (despite higher upfront costs in some cases).

Costs imposed by stressors and shocks can be either tangible or intangible, direct or indirect.

Direct costs are directly attributed to the stressor or shock, for example water damage following a flood. Indirect costs are not directly caused by the stressor or shock but arise because of its occurrence.

Table 2. Examples of costs from stressors and shocks

Direct costs	Indirect costs
• damage to buildings and contents including residential, commercial and public • damage to public assets (for example, closure of roads) • clean-up and remediation costs • loss of life • loss of biodiversity • longer travel times (for example, due to road closures and public transport cancellation)	• loss of service • loss of wages or business disruption • alternative accommodation • amenity loss • environmental costs such as reduced water and air quality • erosion • health impacts such as stress and anxiety • loss or reduction of access to goods and services (for example, a shop cannot be restocked because of flood-related road closures)

Costs and benefits from stressors and shocks should be clearly identified and quantified where material. The CBA Guidelines provide guidance on identifying, forecasting and valuing costs and benefits.

Impacts of stressors and shocks are often uncertain. Refer to Appendix 4 of the CBA Guidelines for guidance on accounting for risk and uncertainty in CBA. The Disaster CBA Framework also provides further guidance for resilience initiatives.

Using a full probability distribution of possible outcomes — such as the distribution estimated by **Monte Carlo Analysis** — is best practice. The Disaster CBA Framework recommends Monte Carlo Analysis is used for CBA for resilience initiatives. Monte Carlo Analysis is also encouraged for other initiatives subject to risk and uncertainty where data on the distribution of possible outcomes exists or can be inferred.

Simple distributions can be used to calculate the central estimate where estimating a full distribution is not feasible. For example, generating a three-point estimate — comprising a worse-case, most likely and best-case scenario with probability weights based on expert opinion, or taking the midpoint of several estimates.

Scenario testing is useful to test outcomes when specific events occur. For example, an option that does not manage or mitigate stressors and shocks might produce the highest net present value (NPV) and benefit cost ratio (BCR) under the central set of assumptions, but unsatisfactory results under a plausible scenario that assumes more frequent and severe impacts from stressors and shocks.

Appendix A: Resources

Table 3. NSW Government sources

Source	Description
AdaptNSW	Provides climate change information and NARCliM2.0 projections. This includes the interactive climate change projections map, regional climate change snapshots, case studies, method and how to apply the projections.
NSW Reconstruction Authority	The RA website provides an overview and analysis of statewide risk including the State Disaster Mitigation Plan, Disaster Adaptation Planning and hazard and region-specific projects.
NSW Planning Portal Spatial Viewer	Provides spatial information relating to planning controls on land in NSW including landslides, bushfires and floods.
Cross Dependency Initiative (XDI) NSW Globe	XDI is a spatial mapping tool that integrates hazard information, asset vulnerability, and exposure data to analyse and quantify risks and model asset responses. The tool quantifies the financial, asset, and service impacts posed by climate change. For more information and access, contact adaptation.practice@environment.nsw.gov.au
Local bushfire management plans	Provides information on bushfire risks and how land managers and fire authorities will manage risks.
NSW SES Tsunami Evacuation Map	Shows areas that may require evacuation in the event of a land-threat tsunami.
NSW Flood Data Portal	Primarily includes data from flood projects under the NSW Floodplain Management Program.
NSW Flood Risk Management Manual	Supports management of flood-prone land and achieves effective flood risk management outcomes accounting for social, economic, ecological and cultural factors.

Table 4. Other sources

Source	Description
Australian Exposure Information Platform (AEIP)	The AEIP allow users to identify what the exposure to floods, bushfires, heatwaves and coastal hazards is within an area.
Australian Rainfall and Runoff (ARR)	The ARR is a national guideline document, data and software suite that can be used for the estimation of design flood characteristics in Australia.
Geoscience Australia: National Seismic Hazard Assessment (NSHA)	The NSHA model supports identification of earthquake ground shaking hazard probabilities across Australia. The model also assesses credible earthquake scenarios to improve risk mitigation and inform evidence-based disaster and land-use management plans.
Geoscience Australia: Probabilistic Tsunami Hazard Assessment (PTHA)	Identifies regional and national areas at high risk of earthquake induced tsunamis and estimates the frequency of earthquake-tsunamis on the Australian coast. The tool can be used to assess credible tsunami scenarios to improve risk mitigation and create evidence-based disaster management and evacuation plans.
Australian Climate Service (ACS)	Draws information from the Australian Government's leading science agencies on the risks and impacts of natural hazards. The ACS includes information on heatwaves, floods, bushfires, severe thunderstorms, tropical cyclones, earthquakes, tsunamis, and volcanoes.
Geoscience Australia: Tropical Cyclone Hazard Assessment (TCHA)	The TCHA identifies local and regional areas at high threat to cyclones and severe wind and provides an assessment of the likelihood and intensity of the occurrence of tropical cyclone winds across the Australian region.
Australian Disaster Mapper	Provides historical information on declared disasters.
Australian Disaster Resilience Knowledge Hub	National frameworks, resources, and information relating to disaster risk reduction, emergency planning, and understanding hazards. Includes links to the National Disaster Risk Reduction Framework, Australian Disaster Resilience Index, and Community Engagement for Disaster Resilience.
Other credible sources	Information from credible scientific sources such as the CSIRO, NHRA and academic institutions can also be used to inform risk.

Table 5. Legislation, policies and strategies related to resilience

Policy	Resilience implication
Climate Change (Net Zero Future) Act 2023	Legislates NSW's approach to climate change by establishing: • guiding principles for action to address climate change that consider the impacts, opportunities and need for action in NSW • emissions reduction targets for NSW: — 50 per cent reduction on 2005 levels by 2030 — 70 per cent reduction on 2005 levels by 2035 — net zero by 2050. • an objective for NSW to be more resilient to a changing climate • an independent, expert Net Zero Commission to monitor, review, report on and advise on progress towards these targets.
NSW Climate Change Adaptation Strategy	Sets out decision-making principles and objectives for adaptation, key priorities and a suite of actions — including a regular state-wide climate change risk and opportunity assessment to identify priority actions.
State Disaster Mitigation Plan	Sets out the NSW Government's strategy to reduce the impact and cost of natural hazards on people, homes, livelihoods, infrastructure and communities. It includes short-term and medium-term actions that will support and guide the development of disaster adaptation plans (DAPs).
Regional disaster adaptation plans (DAPs)	A disaster adaptation plan brings together hazard information and analysis of risk-reducing options for a defined geographic area. Regional DAPS will set action plans to implement a preferred adaptation pathway — or package of risk reduction options — to reduce natural hazard risks for a region.
State Emergency Management Plan (EMPLAN)	Describes NSW's approach to emergency management, governance and coordination arrangements, and roles and responsibilities of agencies. Emphasises risk management across prevention, preparation, response and recovery. EMPLAN Sub-Plans are action plans for specific hazards or events. They contain more detailed information than the EMPLAN.
NSW State Infrastructure Strategy	Sets out priorities over the next 20 years. It focuses on applying a structured and systemic approach to resilience across asset types, risks and asset lifecycle as well as delivering assets that reduce the risk and impact of major natural hazards and shocks.

52 Martin Place
Sydney NSW 2000

GPO Box 5469
Sydney NSW 2001

W: treasury.nsw.gov.au