



Climate Adaptation and Community Resilience Plan

A sustainable community of international significance in
the Capital Region

May 2021



Suburban Land
Agency



Acknowledgement of Country

Riverview Projects (ACT) Pty Ltd on behalf of the Ginninderry Joint Venture proudly acknowledges Australia's Aboriginal and Torres Strait Islander community and their rich culture and pays respect to their Elders past and present. We acknowledge Aboriginal and Torres Strait Islander peoples as Australia's first peoples and as the Traditional Owners and custodians of the land and water on which we rely.

We recognise and value the ongoing contribution of Aboriginal and Torres Strait Islander peoples and communities to Australian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

Aboriginal and Torres Strait Islander people should be aware that this report may contain images or names of deceased persons.

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Note

This report has been written by Riverview Projects (ACT) Pty Ltd as Development Manager for the Ginninderry Joint Venture.

This report supersedes Ginninderry's Draft Ginninderry Climate Adaptation and Community Resilience Plan of 14 January 2019 written by Elton Consulting

Version Control

Version 1.1 Published 30/5/2021

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Introduction

Like all countries around the world, Australia is facing the impacts of a changing climate. The recent summer bushfire season has been a stark reminder to much of Australia about the devastating effects of extreme weather events and of our vulnerabilities. The Bureau of Meteorology and CSIRO have statedⁱ that more frequent and intense storms, heatwaves, fire weather and drought will continue to impact our lives now and into the future. As such, Australia will need to plan for and adapt to some level of climate change.

As a community, Ginninderry also faces the same risks of climate change, with potential damage to housing and infrastructure and threats to public health and safety (including loss of life) likely if we do not put measures in place to ensure that we can adapt and be resilient to future climate events.

The developments we design and build today must be able to adapt to future climate events and be resilient to future events. The future adaptation and resilience of our developments depends on two main elements – the hard infrastructure (buildings, roads, etc.) and social infrastructure (the community of residents, visitors and workers). It is the combination of these two elements that creates strong levels of adaptation and resilience.

To understand the resilience of both of these elements, the Ginninderry Joint Venture has undertaken a climate change risk assessment and defined adaptation actions to build the resilience of that infrastructure and communities to climate change.

Climate Change Adaptation refers to actions taken that help individuals, communities, organisations and natural systems to deal with those consequences of climate change that cannot be avoided. Community Resilience is the ability for people who live, work or visit an area to be prepared for and recover from natural or man-made hazards.

Ginninderry's Climate Adaptation and Community Resilience Plan underpins the resilience of Ginninderry's community, infrastructure and natural environment.

It identifies potential actions to support climate adaptation and community resilience. These actions are aimed at reducing social, economic and environmental vulnerability within Ginninderry.

Review of the Plan

A review of this plan will be conducted alongside the recertification of Ginninderry's Green Star Communities rating which is conducted every 5 years.

Next scheduled review: 2026

Climate Adaptation

Summary of Site Characteristics

Introduction

Ginninderry is a new residential development which extends from the west of Belconnen, ACT into the Yass Valley, NSW. Ultimately home to approximately 30,000 residents over the next 30-40 years, Ginninderry aims to showcase world leadership through its planning, design, construction and post-occupancy performance.

Ginninderry is governed by a joint venture being the ACT Government and Riverview Developments (ACT) Pty Ltd with Riverview Projects (ACT) Pty Ltd acting as Development Manager.

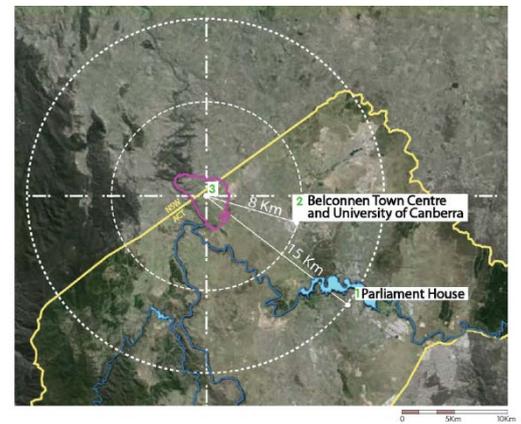
Site Characteristics

Ginninderry covers a site area of 1,600ha and is located approximately 15kms from Parliament House and 8km from the Belconnen Town Centre. It is largely a greenfields development that sits adjacent to the existing ACT suburbs of Holt and Macgregor. The site extends across the ACT/NSW border and is landlocked on its Northern and Western fronts by Ginninderry Creek and the Murrumbidgee River.

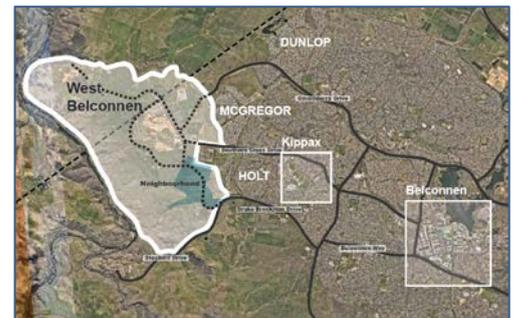
The urban areas of Ginninderry sit atop a plateau, with water ways falling into the Murrumbidgee River and Ginninderra Creek areas. Ginninderry will become the north-western urban edge of Canberra and will be surrounded by the Ginninderry Conservation Corridor.



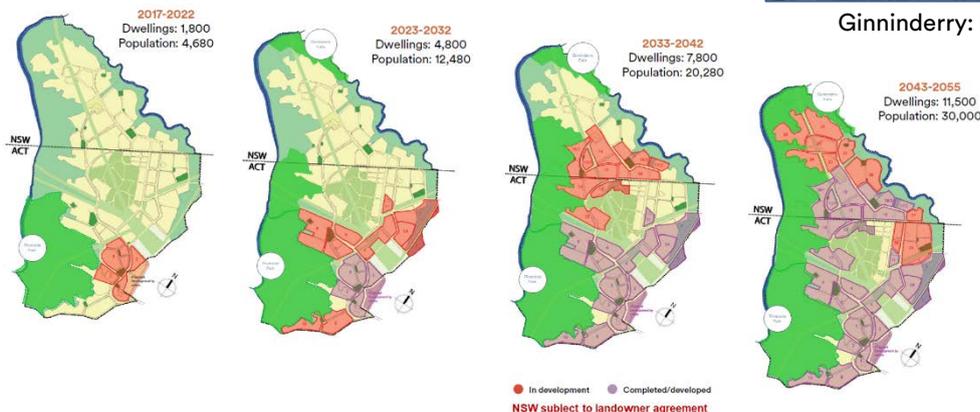
Ginninderry: Australia Context



Ginninderry: ACT/NSW context



Ginninderry: Belconnen Context



Ginninderry Indicative Staging



Ginninderry: Topographic Context – Masterplan overlayed on satellite imagery.
View from northwest looking back over the ACT

Current and Projected Land Uses and Assets

At the time of this update, Ginninderry's first neighbourhood of Strathnairn has approximately 500 residents. This vibrant community now has The Link – Ginninderry's' first multipurpose community centre, sustainability education centre and the project office for the Ginninderry team.

The first neighbourhood scale park - Paddy's Park was opened in November 2020 and Strathnairn Arts Precinct continues to provide a Gallery, Café, local artist studios and community workshop facilities. The Ginninderry Conservation Trust oversees 242ha of Conservation Corridor. The balance of the ACT and NSW lands currently under the ownership of the Ginninderry Joint Venture are grazed with 800 head of Angus cattle. Ginninderry achieved its first 6 Star Green Star Communities certification in 2016 and has a strong commitment and vision to continue to be a sustainable community of international significance in the Capital Region.

Ultimately, over the next 30-40 years, Ginninderry will have:

- 30,000 residents within 11,500 dwellings – being a mix of standard housing, townhouses and multiunit homes
- 4 schools (a mix of both public and private high school and primary schools)
- Associated community, recreation and mixed use facilities
- A Market Centre with an expected one main line supermarket with smaller retail services
- A 596ha Conservation Corridor run and managed by the Ginninderry Conservation Trust
- Extensive tracks and trails with river access to the Murrumbidgee River and Ginninderra Falls precincts
- Designed and considered homes built in line with Ginninderry's Housing Development Requirements including rain water tanks, home energy systems, efficient heating, cooling and hot water systems and climate appropriate front landscaping.

Understanding our Current Climate

Australia

In the “State of the Climate 2020”ⁱⁱ report the Bureau of Meteorology and CSIRO discuss the long-term climate trends that occur across Australia. Key points identified within the report are:

- Australia’s climate has warmed on average by 1.44°C since 1910. This warming has led to an increase in the frequency of extreme heat events
- Rainfall has been declining around the country with:
 - o 16% decline in April to October and 20% decrease in May to July in the southwest of Australia since 1970.
 - o 12% decline in April to October in the southeast of Australia since the late 1990s.
- There has been a decrease in streamflow’s in the majority of streamflow gauges across southern Australia since 1975.
- Rainfall and streamflow have increased across parts of northern Australia since the 1970s.
- There has been an increase in extreme fire weather and in the length of the fire season across large parts of the country since the 1950s, especially in southern Australia.
- There has been a decrease in the number of tropical cyclones observed in the Australian region since 1982.
- Oceans around Australia are acidifying and have warmed by around 1 °C since 1910, contributing to longer and more frequent marine heatwaves.
- Sea levels are rising around Australia, including more frequent extremes, that are increasing the risk of inundation and damage to coastal infrastructure and communities.

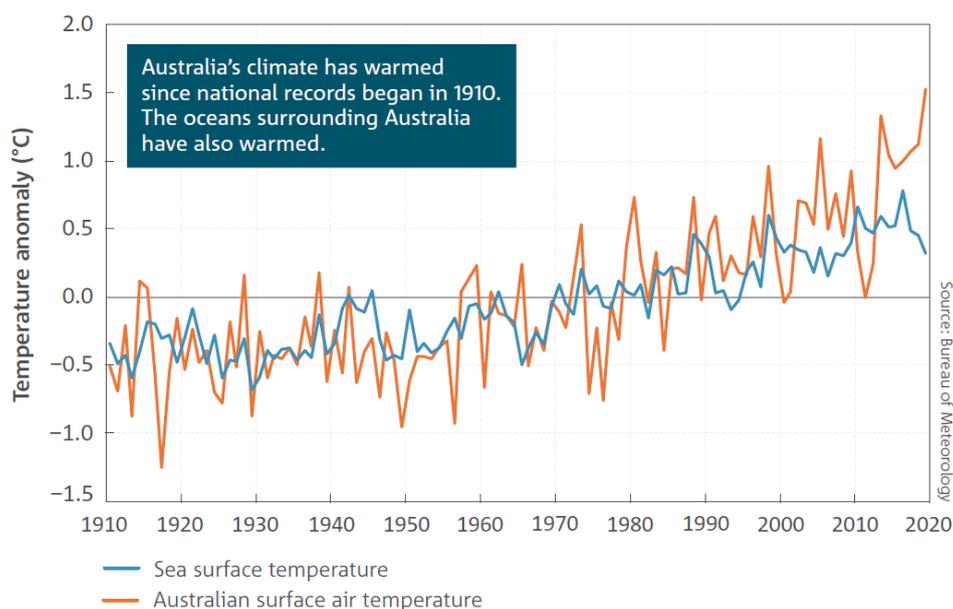
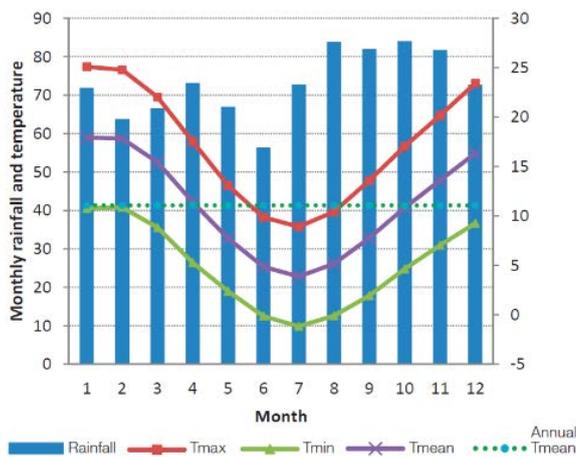


Figure 1: Australian surface air temperature and surrounding sea temperatures (extract from BoM, State of the Climate 2020ⁱⁱⁱ)

Australian Capital Territory

The varied topography within the Australian Capital Territory (ACT) results in large variation of climate conditions over its relative small geographic size^{iv}. For the purposes of this report, the following current climate observations are for the north of the ACT, around the Canberra area.

- Canberra experiences distinct seasons with large variations in average, minimum and maximum temperatures throughout the year. The average monthly temperature in the ACT ranges from approximately 18°C in January to around 4°C in July.
- Long term temperature records show an increase in temperatures in the ACT since approximately 1950 with an acceleration in the rate of increase in temperatures observed within the last two decades.
- On average, the ACT experiences fewer than 10 hot days each year (maximum temperatures above 35°C).
- Canberra typically experiences 70–90 cold nights per year (minimum temperatures below 2°C)



- Canberra receives an average of 400-800mm of rainfall each year.
- Rainfall is generally uniform throughout the year with low variability throughout the seasons.
- During much of the first half of the 20th Century, the ACT has experienced drier conditions with an increase in year-to-year variability in rainfall from the 1950s to 1990s. The first decade of the 21st century was characterised by below average rainfall during the Millennium Drought.

Figure 2: ACT Seasonal Rainfall and Temperature Variations (extract from ACT Climate Change Snapshot^v)

- The long term Forest Fire Danger Index (FFDI)¹ estimates show Canberra as having an average daily FFDI of 7. An FFDI value of less than 12 is considered to indicate low to moderate fire weather.
- Fireweather is classified as 'severe' when the FFDI is above 50. Canberra has on average 1.1 severe fire weather days each year.

| Average FFDI | | | | | |
|--|--------|--------|--------|--------|--------|
| Station | Annual | Summer | Autumn | Winter | Spring |
| Canberra | 6.9 | 11.4 | 7.2 | 2.6 | 6.4 |
| Number of severe fire weather days (FFDI>50) | | | | | |
| Canberra | 1.1 | 0.8 | 0.2 | 0 | 0.2 |

Figure 3: FFDI values for meteorological stations within the ACT (extract from ACT Climate Change Snapshot^{vi})

¹ The Forest Fire Danger Index (FFDI) is used to quantify fire weather. The FFDI combines observations of temperature, humidity and wind speed with an estimate of the fuel state. Long-term observations of FFDI come from daily measurements of temperature, rainfall, humidity and wind speed at only a small number of weather stations in Australia, with 17 stations located in NSW and the ACT. FFDI values below 12 indicate low to moderate fire weather, 12-25 high, 25-49 very high, 50-74 severe, 75-99 extreme and above 100 catastrophic.

Climate Projections

Choosing our Timescales

Two timescales were chosen to reflect future climate modelling: 2030 and 2070 – to align with broader ACT climate modelling. 2030 and 2070 also align nicely with the projected staging of Ginninderry as 2030 is the approximate year that development on the NSW side of the border will occur. By 2070 all development within Ginninderry will be completed.

NSW and ACT Regional Climate Modelling (NARCLiM)

Climate Change Projections in this snapshot are from the NSW and ACT Regional Climate Modelling (NARCLiM) project. NARCLiM is a multiagency research partnership between the NSW and ACT governments and the Climate Change Research Centre at the University of NSW.

For the purposes of analysis for Ginninderry, the ACT region was selected (even though Ginninderry extends into NSW) as the climate projections of the Canberra region are more likely to be consistent with the total Ginninderry site than the more extensive site area of the South East and Tablelands (where there NSW section of Ginninderry is considered).

NARCLiM produces climate projections for two future 20-year time periods: 2020-2039 and 2060-2079.

The climate projections for 2020-2039 are described as NEAR FUTURE and the 2030 projection is the average of the 2020-2039 projections.

The climate projections for 2060-2079 are described as FAR FUTURE and the 2070 projection is the average of the 2060-2079 projections.

Baseline climate figures are taken from 1990-2009 data. Projections are based on simulations from a suite of twelve climate models run to provide detailed future climate information for NSW and the ACT.

NARCLiM data underpins the ACT's Climate Change Strategy^{vii}.

NARCLiM Projections for the ACT^{viii}

| | 2030 | | 2070 | |
|------------------------------------|----------|--|---------|--|
| TEMPERATURE | | | | |
| Mean Air Temperature | + 0.66°C | Mean temperatures are projected to rise by 0.7 °C by 2030. The increases are occurring across the region with the greatest increases during summer. All models show there are no declines in mean temperatures across the ACT. | +2.04°C | Mean temperatures are projected to rise by 2 °C by 2070. The increases are occurring across the region with the greatest increases during summer. All models show there are no declines in maximum temperatures across the ACT. |
| Average Minimum Temperature | + 0.62°C | Minimum temperatures are projected to rise by 0.6 °C by 2030. The increases are occurring across the region with the greatest increases during summer. All models show there are no declines in minimum temperatures across the ACT. Changes in minimum temperatures, also known as night-time temperatures are known to impact on human health. | +1.98°C | Minimum temperatures are projected to rise by 2 °C by 2070. The greatest increases are occurring in the south west during summer and spring. All models show there are no declines in minimum temperatures across the ACT. Changes in minimum temperatures, also known as night-time temperatures are known to impact on human health. |
| Average Maximum Temperature | + 0.72°C | Mean temperatures are projected to rise by 0.7 °C by 2030. The increases are occurring across the region with the greatest increases during summer. All models show there are no declines in mean temperatures across the ACT. | +2.10°C | Maximum temperatures are projected to rise by 2 °C by 2070. The increases are occurring across the region dominated by summer and spring. All models show there are no declines in maximum temperatures across the ACT. |

| RAINFALL | | | | |
|---|-------|---|--------|---|
| Annual Rainfall | -2.8% | There will be little change in annual rainfall across the ACT by 2030. Rainfall will increase in autumn but there will be less rain in winter and spring. | -0.4% | Annual rainfall varies across the ACT by 2070. The greatest increases are seen around Canberra during summer and autumn. Decreases occur across the region during spring and most of the region during winter. |
| Seasonal Rainfall | 0.0% | Summer | +7.2% | Summer |
| | +7.8% | Autumn | +8.6% | Autumn |
| | -2.8% | Winter | -2.5% | Winter |
| | -8.5% | Spring | -12.5% | Spring |
| FIRE | | | | |
| Change in number of days a year with an FFDI >50 | +0.1 | Forest Fire Danger Index (FFDI) is used in NSW to quantify fire weather. The FFDI combines observations of temperature, humidity and wind speed. Fire weather is classified as severe when the FFDI is above 50. Severe fire weather is projected to increase in summer and spring across the region by 2030. Declines during Autumn are likely due to increases in rainfall. There is no change during winter. These increases are being seen during the peak prescribed burning season (spring) and peak fire risk season (summer). | +0.3 | Forest Fire Danger Index (FFDI) is used in NSW to quantify fire weather. The FFDI combines observations of temperature, humidity and wind speed. Fire weather is classified as severe when the FFDI is above 50. Severe fire weather is projected to increase in summer and spring across the region by 2070. Declines during Autumn are likely due to increases in rainfall. There is no change during winter. These increases are being seen during the peak prescribed burning season (spring) and peak fire risk season (summer). |
| HEAT | | | | |
| Change in number of days a year (max temp >35 °C) | +1.8 | Hot days are projected to increase across the region by an average of 2 days per year by 2030. The greatest increases are seen around Canberra which is projected to experience 1-5 more hot days per year. | +6.2 | Hot days are projected to increase across the region by an average of 6 days per year by 2070. The greatest increases are seen in around Canberra which is projected to experience 10-20 more hot days per year. |
| COLD NIGHTS | | | | |
| Change in number of cold nights (min temp <2 °C) | -13.1 | Cold nights are projected to decrease across the ACT by an average of 13 fewer nights per year by 2030. The ACT is projected to experience this across the region. Changes in cold nights can have significant impacts on native ecosystems and agricultural crops reliant on cold winters. | -42.5 | Cold nights are projected to decrease across the region by an average of 43 fewer nights per year by 2070. The ACT is projected to experience this across the region. Changes in cold nights can have significant impacts on native ecosystems and agricultural crops reliant on cold winters. |

Our Future Climate

From these Projections, the ACT Government identified^{ix} the four most significant impacts on the ACT:

- Heatwaves will become hotter (day and night), longer and more frequent.
- Bushfires will become more frequent and severe as rainfall is reduced and temperatures increase.
- Drought will become more frequent and prolonged as rainfall is seasonally more variable.
- Storms will become more frequent and severe over a longer summer season, with flash flooding and violent winds.

Community Resilience

Introduction

Understanding Community Resilience

People and community are the heart of Ginninderry. Community Resilience is the ability for people who live, work, or visit an area to be prepared for and recover from natural or man-made hazards. It is this social framework of connectedness that allows us to adapt and be resilient to future climate events.

Building a sense of belonging at Ginninderry is fundamental to its resilience. The communities that bounce back from future events are those that have built a strong sense of ownership and belonging to their place. The communities that have recovered the quickest to recent climate events have been those that have all come out to help in the repair and recovery activities.

The ACT Government in the Territory Wide Risk Assessment^x defines resilient communities as those which:

- » possess an understanding of the likelihood and consequence of natural disasters;
- » take steps to prepare for and mitigate the effects of natural disasters;
- » are self-reliant;
- » are adaptable to a changing situation;
- » integrate with the emergency services when a disaster occurs;
- » restore a range of functions immediately after a disaster occurs; and
- » work together as a community to assist each other in the recovery process.

For the purposes of this Plan, resilience of the Ginninderry community, in addition to the above, is influenced by:

- » awareness and participation
- » governance
- » community profile and financial capacity.

At a broad level, obtaining strong resilience in these areas sets up a good foundation for adaptive capacity of Ginninderry and its community into the future. Considerations for how these aspects will impact on Ginninderry's resilience is given below.

Awareness and participation

A good level of awareness and participation facilitates community preparation and resilience to shocks and stresses.

Awareness of climate issues and extreme weather events will be raised within the Ginninderry community as it grows and evolves through events, education, and online communications. Encouraging participation in volunteer activities and community events will foster connection at the same time as educating the community on sustainability topics. Through participation in these activities, residents and workers will receive and understand information relevant to them and their networks.

Ongoing education about climate change, the potential impacts at Ginninderry, and community responses will be customised appropriately for the types of Ginninderry occupants.

Governance

The Ginninderry community will exist across the ACT/NSW border and as such appropriate cross border emergency response systems have been considered. In addition to these official structures, local and informal governance structures will be vital for community resilience at Ginninderry.

The Ginninderry community will feature business owners, employees, service providers, visitors, and residents of a variety of dwelling types. Community empowerment through sustainability projects and programs should be supported at Ginninderry – particularly those that encourage self-reliance in the community. Office and retail owners/tenants, residential body corporates, and residents are encouraged to reduce their footprint through green leasing and building initiatives.

Community profile and financial capacity

Ginninderry will be a diverse community. While a broad age structure supports creating stronger community resilience into the future, the elderly and less mobile may be more vulnerable to climate impacts. Frameworks for encouraging support across age groups and for vulnerable members of the community will be important for Ginninderry.

In addition to age, higher levels of education and affluence generally lend themselves to higher resilience. This is due to an individual's or community's increased capacity to prepare, recover, and be self-sufficient. At Ginninderry, household incomes will vary. This means it will be important to establish community support schemes where residents can build friendships, assist each other (such as through a sharing economy), and establish a level of community interdependence. It will also be important to ensure access to relevant government services on either side of the ACT/NSW border for those who require further assistance.

Recognising this diversity, community development will focus on establishing and maintaining a degree of interconnectivity across Ginninderry.

Risk Analysis and Assessment

Developing Ginninderry's Risk Matrix

Overarching Policy and Risk Assessment Documents

Ginninderry's Climate Adaptation and Community Resilience Plan has been developed with reference to the following ACT Government adaptation planning documents:

- ACT Climate Change Strategy 2019 – 2025^{xi}
- Canberra's Living Infrastructure Plan: Cooling the City^{xii}
- Territory Wide Risk Assessment, ACT Government ACT Emergency Services Agency, 2017^{xiii}
- ACT Climate Change Adaptation Strategy: Living with a Warming Climate, 2016^{xiv}

Stakeholder Consultation

Alongside Canberra-wide stakeholder engagement which occurred in the development of the ACT Government documentation above, the following groups were directly engaged by Ginninderry to establish and review all risk priorities.

Ginninderry's People and Place Group (PPG)

The PPG membership is drawn from the following groups, businesses and individuals:

- Belconnen Community Council
- Belconnen Community Services
- Business community – including from the Yass Valley Business Chamber
- Schools – Kingsford Smith School and Yass High School
- Ginninderry Aboriginal Advisory Group (GAAG)
- Youth representatives
- ACT peak social services bodies (eg ACT Shelter, ACTCOSS)
- Strathnairn Arts Association
- YassArts
- Health promotion or environment organisation
- Ginninderry residents
- Residents from Belconnen and the Yass Valley

Ginninderry's Bush on the Boundary Group (BoB)

The Ginninderry Bush on the Boundary Reference Group has been developed as a forum for knowledge exchange to assist biodiversity conservation within the project. The Ginninderry JV sponsors the Ginninderra Catchment Group to administer and chair the Bush on the Boundary meetings, enabling it to be an independent reference group that is trusted within the local community.

Key Assets Reviewed

Key assets that were reviewed for climate change risks include:

- Natural and hard landscaping elements (including both the Conservation Corridor, parks and urban open spaces)
- water supply
- grid power
- stormwater and drainage
- internal roads, cycleways and footpaths
- interconnectivity
- external roads
- housing
- community centres
- commercial buildings
- communications

Ginninderry's Risk Matrix

The below table includes all risks identified through an analysis of all Overarching Policy and Risk assessment documents and through stakeholder consultation.

Risks are assessed using Ginninderry's Risk Management Framework which follows the Australian and International Standards for Risk Management (ISO 31000:2018) and uses Ginninderry's internal corporate consequences and success criteria tables as provided in Annexure 1.

| Risk Reference | Risk Description | Likelihood | Consequence | Initial Risk Rating | Risk Treatments | Control Rating | Residual Risk Rating |
|---|--|------------|-------------|---------------------|--|------------------|----------------------|
| TEMPERATURE INCREASE AND HEAT WAVE | | | | | | | |
| 1 | An increase in average temperatures will lead to an increase in HVAC energy and water demand and associated utility and maintenance costs. | 4 | 3.2 | 7.2 S | - Housing Development Requirements - Urban Design Features - Community Facility Design - Education and Guidance - Research and Project Initiatives | 6.7 IE | AM |
| 2 | An increase in extreme heat days could lead to reduced thermal comfort within resident's properties as well as within commercial centres, community centres and schools. Existing air conditioning systems and passive control measures may not be adequate. | 4.2 | 4.2 | 8.4 H | - Housing Development Requirements - Education and Guidance - Community Facilities Design | 5.9 IE | AM |
| 3 | An increase in the number of extreme heat days could lead to heat stress and impact on the health of residents and other development occupants. | 3.4 | 4 | 7.4 S | - Urban Design Features - Education and Guidance - Housing Development Requirements - Community Facilities Design | 6 IE | AM |
| 4 | An increase in the number of extreme heat days could lead to heat stress of construction workers. | 4.6 | 4.1 | 8.7 H | - Policies and Procedures | 8 E | CR |
| 5 | An increase in the number of extreme heat days may lead to a decrease in network capacity and increases in blackouts and brownouts, with flow on impacts to residents, businesses, and other occupants. | 2 | 2 | 4 L | - Urban Design Features - Education and Guidance - Research and Project Initiatives | 9 E | NC |
| 6 | An increase in the number of extreme heat days may accelerate the carbonation of concrete structures and softening of paving, leading to increased maintenance requirements and increased safety risks. | 1 | 4 | 5 L | - Urban Design Features | 5 IE | PR |
| 7 | An increase in the number of extreme heat days may reduce participation in outdoor activities or require such activities to be cancelled, thus negatively impacting community cohesion. | 4.6 | 3.1 | 7.7 S | - Community Connectedness and Emergency Preparedness - Urban Design Features - Community Facilities Design | 6.7 IE | AM |

| Risk Reference | Risk Description | Likelihood | Consequence | Initial Risk Rating | Risk Treatments | Control Rating | Residual Risk Rating |
|-----------------------------|--|------------|-------------|---------------------|--|----------------|----------------------|
| RAINFALL AND DROUGHT | | | | | | | |
| 8 | Drought will affect potable water availability (water restrictions) which may impact ability to operate buildings optimally and maintain playing fields and other open spaces. | 4.4 | 3.9 | 8.3 H | - Urban Design Features - Housing Development Requirements - Education and Guidance | 6.2 IE | AM |
| 9 | Drought may cause a deterioration in water quality, and possible growth of aquatic weeds or spread of waterborne diseases. | 3.4 | 3.6 | 8 S | - Urban Design Features - Research and Project Initiatives - Education and Guidance - Ginninderry Conservation Corridor Trust | 6.8 IE | AM |
| 10 | More frequent drought increases flammable vegetation, supporting environments for extreme fire events. | 4.7 | 5 | 9.7 H | - Ginninderry Conservation Corridor Trust - Urban Design Features - Policies and Procedures | 7 E | CR |
| 11 | Extended periods of drought will increase stress to the native vegetation and could result in dieback across a broad range of species. | 4.2 | 4.2 | 8.4 H | - Ginninderry Conservation Corridor Trust - Urban Design Features - Policies and Procedures - Education and Guidance - Community Facilities Design - | 5 IE | AM |
| 12 | Drought may cause deterioration of water quality and water flow reducing vital habitat for aquatic vertebrates and invertebrates and impacting aquatic vegetation. | 4.5 | 4.5 | 9 H | - Urban Design Features - Research and Project Initiatives - Education and Guidance - Ginninderry Conservation Corridor Trust | 5.3 IE | AM |
| STORMS AND FLOODING | | | | | | | |
| 13 | An increase in storms will increase local flood events, limiting access and egress that causes business interruption and resident inconvenience. | 3 | 4 | 7.7 S | - Housing Development Requirements - Urban Design Features - Education and Guidance - Research and Project Initiatives - Community Connectedness and Emergency Preparedness - Policies and Procedures | 8 E | CR |
| 14 | Flash flooding causes a danger to life and property as well as has environmental impacts. | 3 | 5 | 8 H | - Housing Development Requirements - Urban Design Features - Education and Guidance - Research and Project Initiatives - Community Connectedness and Emergency Preparedness - Policies and Procedures | 8 E | CR |
| 15 | Storms lead to increased risk of landslips, with associated risks to property damage, health and safety issues, and business interruption. | 3 | 5 | 8 H | - Urban Design Features - Research and Project Initiatives | 5 IE | AM |

| Risk Reference | Risk Description | Likelihood | Consequence | Initial Risk Rating | Risk Treatments | Control Rating | Residual Risk Rating |
|---------------------|---|------------|-------------|---------------------|--|----------------|----------------------|
| | | | | | - Community Connectedness and Emergency Preparedness - Policies and Procedures | | |
| 16 | Strong winds and/or hail associated with storms may cause property damage, health and safety issues, and business interruption. | 4 | 4 | 8 H | - Community Connectedness and Emergency Preparedness | 6 IE | AM |
| 17 | Storms damage will increase the life cycle cost of stormwater assets. | 1 | 4 | 5 L | - Urban Design Features - Research and Project Initiatives - Policies and Procedures | 8 E | NC |
| 18 | Increased storm events with strong wind or hail may result in the deaths of native bird species. | 1 | 2 | 3 L | - Ginninderry Conservation Corridor Trust | 1 IE | PR |
| 19 | Flash flooding causes damage and increased sedimentation of water systems and increases runoff from surrounding paddocks. High flows through the water systems may damage or kill aquatic plants and animals. | 4 | 4 | 8 H | - Ginninderry Conservation Corridor Trust - Urban Design Features - Research and Project Initiatives - Policies and Procedures | 8 E | CR |
| FIRE WEATHER | | | | | | | |
| 20 | More frequent bushfires may cause property damage and result in personal injury or loss of life. | 5 | 5 | 10 H | - Housing Development Requirements - Urban Design Features - Education and Guidance - Research and Project Initiatives - Community Connectedness and Emergency Preparedness - Policies and Procedures - Ginninderry Conservation Corridor Trust - Community Facilities Design | 6 IE | AM |
| 21 | More frequent bushfires will increase the risk of smoke and ash penetration into buildings through unsealed areas, causing property damage, business interruption, and negative impacts on health and safety. | 5 | 4 | 9 H | - Education and Guidance - Urban Design Features - Housing Development Requirements - Research and Project Initiatives - Community Connectedness and Emergency Preparedness | 6 IE | AM |
| 22 | More frequent bushfires will reduce habitat for native animals and reduce the population of native wildlife including vulnerable species. | 5 | 5 | 10 H | - Urban Design Features - Ginninderry Conservation Corridor Trust - Research and Project Initiatives | 6 IE | AM |
| 23 | More frequent bushfires will impact vulnerable ecological communities i.e., Box-gum woodland and may create an environment for exotic vegetation to succeed. | 5 | 5 | 10 H | - Ginninderry Conservation Corridor Trust - Research and Project Initiatives | 6 IE | AM |

| Risk Reference | Risk Description | Likelihood | Consequence | Initial Risk Rating | Risk Treatments | Control Rating | Residual Risk Rating |
|----------------|---|------------|-------------|---------------------|--|----------------|----------------------|
| 24 | More frequent bushfires will increase the rate of erosion along streams and rivers leading to increased sedimentation. | 5 | 4 | 9 H | - Ginninderry Conservation Corridor Trust - Research and Project Initiatives - Urban Design Features | 6 IE | AM |
| | OTHER | | | | | | |
| 25 | The demand on emergency services during extreme events (heat wave, storm, bushfire) exceeds capacity, with impacts on health, safety, and recovery. | 5 | 5 | 10 H | - Research and Project Initiatives - Policies and Procedures - Community Connectedness and Emergency Preparedness | 6 IE | AM |
| 26 | Extreme weather events disrupt communications services and infrastructure. | 5 | 5 | 10 H | - Research and Project Initiatives - Community Connectedness and Emergency Preparedness | 6 IE | AM |
| 27 | Increased risk of bushfire and storms leads to increased insurance costs or inability to get insurance. | 5 | 5 | 10 H | - Research and Project Initiatives - Housing Development Requirements - Community Connectedness and Emergency Preparedness | 6 IE | AM |

| Inherent risk ratings | | Control ratings | | Residual risk ratings (RR) | |
|-----------------------|------------------------|-----------------|---------------------------------|----------------------------|-----------------------------------|
| H | High risk | E | Effective control environment | AM | Active management required |
| S | Significant risk | IE | Ineffective control environment | AM | Active management/periodic review |
| M | Moderate inherent risk | NA | Not assessed | CR | Continuous review |
| L | Low inherent risk | | | PR | Periodic review |
| | | | | NC | No major concern |

Ginninderry's Risk Treatments

Ginninderry's Housing Development Requirements

Ginninderry's Housing Development Requirements include a number of measures that are able to help mitigate risks identified within the Risk Analysis process. Compliance is achieved through a Compliance Bond at settlement, design approval process and compliance inspection at completion of the build process.

- Higher efficiency heating and cooling appliances: more efficient appliances means that they cost less to run reducing utility costs (Risk 1)
- Home Energy Systems: including minimum PV panels, Home energy management systems and compatible inverters allow residents to generate renewable power directly reducing utility costs (Risk 1, Risk 8)
- Rain Water Tanks – Provide non-potable water storage and re-use on blocks over 250m² reducing demand on potable water and utility costs (Risk 1, Risk 13, Risk 14)
- Bushfire Attack Levels provided where deemed appropriate by the ACT Government (Risk 20 and 21, Risk 27)
- Providing front landscaping packages ensuring shading and soft landscaping (Risk 2 and 3), reducing sediment and erosion runoff (Risk 13, Risk 14)

Education and Guidance

- The GX Display Village promotes sustainable buildings, sustainable landscapes and sustainable living. A Sustainability Trail is available through the GX Display Village App showcasing all sustainability features throughout the village. All Display Village homes have been mandated to be a minimum of NatHERS 7 star rated, have double glazing, have renewable home energy systems, solar or heat pump hot water systems, have rainwater tanks and higher efficiency heating and cooling systems. All display village homes were also required to undergo air leakage testing (see builder education below). The GX Display Village aims to promote a higher level of sustainability by showcasing a higher standard of construction than the minimum requirements of the Ginninderry Housing Development Guidelines (higher efficiency heating and cooling systems - Risk 1, lighter roof colours – Risk 2, habitat ponds (Risk 2 and Risk 8), rain water tanks and treatment – Risk 8).
- Builder Education: display village builders were invited to participate in an air leakage testing workshop prior to conducting air leakage tests on all display village homes. Reducing unwanted air leakage reduces the need for mechanical heating and cooling and also reduces smoke and ash penetration (Risk 1, Risk 21)
- Ginninderry Smart Living Brochure: provides guidance on building and designing more climate appropriate homes. It includes guidance for residents a range of house design considerations including designing for the Canberra climate and climate variability (Risk 1, Risk 2), insulating and draught proofing (Risk 1, Risk 2, Risk 21); lighter roof colours (Risk 1, Risk 2), renewable energy systems (Risk 1); indoor air quality (Risk 21); Green shading and soft landscaping (Risk 2, Risk 3, Risk 13, Risk 14), battery storage (Risk 5), air leakage and ventilation (Risk 21).
- Sustainability Drop-in sessions: providing one-on-one guidance to residents and future purchasers on sustainable building practices including advice on double glazing, NatHERS ratings, passive solar design, home energy systems, rainwater tanks, air conditioning systems, water fixtures and fittings (Risk 1, Risk 2, Risk 5, Risk 13, Risk 14, Risk 21)
- Educational Workshops: Provided at settlement for residents, collaboration with the Canberra Environment Centre to provide continuing workshops at The Link, Building at Ginninderry events, Sustainable House Day events, Site Tours and Presentations to external education centres (schools,

universities, TAFE), Industry and community groups.

- Social Media engagement: Ginninderry has established the Strathnairn Locals Facebook group which is designed to promote connections between the residents within Ginninderry and the surrounding suburbs. Strathnairn Locals is not only an avenue for the promotion of events but also provides a non-formal way to educate residents about key environmental issues.
- The Ginninderry Community Newsletter and Resident Resources webpages also provide an important avenue for community education.
- An open-door policy: Ginninderry's Project Team sit within the Ginninderry development and are available to residents and visitors alike to answer questions, queries and provide guidance in person, 7 days a week.

Community Facilities Design

The Link is Ginninderry's first multipurpose community facility.

- Sustainability Education Centre: The Link includes several sustainability features related to good sustainable design. This includes passive design features (Risk 1, Risk 2), Charred messmate timber cladding, modwood decking – fire-resistant materials selection Risk 20, native and climate appropriate landscape design (Risk 2), frog habitat ponds (Risk 8, Risk 9, Risk 11, Risk 12). It also includes double glazing, recycled timber and brick, home energy systems (PV, HEMS and Battery), Higher efficiency appliances, and waste management demonstrations.
- The Link provides free access to shelter, drinking water, shower and toilet facilities (Risk 2, Risk 3).
- Safe Refuge Buildings: The Link has been designed as a safe refuge building, providing shelter in the event of a fire event (Risk 20)
- The Link provides indoor community spaces accessible for hire and use by residents and the surrounding region. The Link also includes a number of outdoor, shaded/covered areas which can be used in the event of extreme heat or wet weather. (Risk 7).

Urban Design Features

- Extensive WSUD modelling and system design to ensure appropriate mitigation for flooding and drought including assessment of 1 to 100 year rainfall events, drought, regional water quality targets (Risk 3, Risk 8, Risk 9, Risk 12, Risk 13, Risk 14, Risk 15, Risk 17, Risk 19, Risk 24)
- Irrigation of public open spaces helps to cool the surrounding climate and reduce Urban Heat Island Effect while also helping to increase tree canopy cover. The irrigation throughout Ginninderry has been designed to be fed by reused stormwater through the Water Sensitive Urban Design treatment train (Risk 1, Risk 3, Risk 8)
- Passive street tree watering: provides watering inlets from gutters and swales to allow stormwater runoff to directly water trees (Risk 11)
- Retaining and maintaining mature trees helps to provide cool, shaded spaces within the urban design of the suburbs and can be used on hot days for refuge (Risk 1, Risk 2, Risk 6, Risk 7)
- Undercover shelters and water taps provided in community recreation parks to provide free access to shade and drinking water (Risk 2, Risk 3, Risk 7)
- Early engagement with Evoenergy (distribution network provider) and trial of Community-scale batteries to provide pilot testing of islanding in times of blackouts. All suburb substation kiosks include an area for future centralised batteries (Risk 1, Risk 5)
- Ginninderry designed to ensure effective travel movements through three arterial roadways in the event of a mass evacuation (Risk 13, Risk 20)

- Climate appropriate landscape design conducted (Risk 10, Risk 22)
- Ginninderry Estate development Plans include full Bushfire assessments including Inner and Outer Asset Protection Zone requirements (Risk 20, Risk 21)
- Assessment of urban heat island effect has been conducted including an assessment of tree canopy cover with a focus on shading hard surfaces including roads and pathways (Risk 6)

Research and Project Initiatives

- The Ginninderry Energy Pilot Project is a partnership between the Ginninderry Joint Venture, Evoenergy and the ACT Government to design and analyse Ginninderry's renewable energy systems. Real time electricity data is collected from all homes within Ginninderry to analyse energy usage (Risk 1) and the close partnership between Evoenergy and the GJV has allowed for a number of trials including residential and centralised battery storage trials (Risk 5, Risk 28)
- Engagement with Transgrid and Evoenergy on relocation of substations and high voltage power lines to ensure security of power supply to the ACT and surrounding regions (Risk 5, Risk 28)
- CSIRO Bushfire Research Project aims to explore best practice and future changes to urban design, housing design and community resilience (Risk 20, Risk 21, Risk 22, Risk 23, Risk 24, Risk 25, Risk 27)
- University of Canberra Long-term Water Monitoring research: aimed to monitor Ginninderry's WSUD strategies and provide real-time advice on, and respond to water quality, rates of flow, sediment and erosion methods. This research incorporates strong collaboration from the research institute, civil contractor, site super intendant, civil engineers and Ginninderry Conservation Corridor Trust (Risk 9, Risk 12, Risk 13, Risk 14, Risk 15, Risk 17, Risk 19)

Policies and Procedures

- Work Health and Safety Plans: The Work Health and Safety Act 2011^{xv} requires work health and safety management plans for all building and construction works. Within each plan, an assessment of climatic/environmental conditions is included. This includes heat stress, heat stroke and working in extreme conditions (Risk 4)
- Ginninderry's EH&S Hazard Identification Register includes sun stroke and heat exhaustion as a Physical Aspect for consideration when considering contractor risks (Risk 4)
- A Bushfire Management Plan (BMP) is in place for Strathnairn Arts Precinct (including The Link, Strathnairn Arts Association) and regular training is required by Ginninderry staff (Risk 20). Fire wardens are required and regular monitoring of fire danger, fire bans and fire weather is undertaken during the bushfire season. The BMP includes clear instruction on the evacuation of staff and visitors and closure of community facilities in the event of severe bush fire weather as well as the management of the landscape to minimise bushfire risk (Risk 10, Risk 25, Risk 27)
- Ginninderry has a full time Construction Surveillance Officer engaged to monitor building construction sites. The Ginninderry team have a strong working relationship with ACT Worksafe and ACT Environmental Protection Authority to ensure best practice EHS, waste and sediment and erosion control measures are adhered to by all builders on site. (Risk 4, Risk 13, Risk 14, Risk 15, Risk 17, Risk 19)

Ginninderry Conservation Corridor Trust

The Ginninderry Conservation Corridor Trust (GCCT) is responsible for the management of the Ginninderry Conservation Corridor. The Conservation Corridor will be managed to high standards of biodiversity conservation, cultural heritage conservation and sustainable recreational use. It is intended to be managed to meet International Union for the Conservation of Nature (IUCN) protected areas standards as a Category IV reserve 'to maintain, conserve and restore species and habitats' and provide for public access, education

and appreciation. The Ginninderry Conservation Corridor Plan of Management documents the management requirements of the GCCT and includes the following responsibilities:

- The GCCT is also responsible for bushfire management within the Conservation Corridor (Risk 10, Risk 21)
- Early erosion mitigation works conducted to ensure stream and creek stability (Risk 19, Risk 24)
- Biodiversity Conservation: including the protection and restoration of the critically endangered Box-Gum Woodland ecological community, and habitats for Pink-tailed Worm Lizard, Murray Cod and Macquarie Perch and a range of other threatened and vulnerable species (Risk 9, Risk 11, Risk 12, Risk 22, Risk 23)
- Promoting community conservation and stewardship. The Corridor will be a centre for active learning about and appreciation of local biodiversity, ecological restoration and the area's cultural heritage by education institutions and the community.

Community Connectedness and Emergency Preparedness

- The Strathnairn Locals Facebook^{xvi} page has been established to provide Ginninderry's residents (and the surrounding communities of Holt and Ginninderra Estate) with a place to connect with each other, find out about the latest news and events, share updates and ask questions. The facebook group is well utilised by residence with 350 members at the time of writing this report.
- Events: Ginninderry has a full-time community development manager engaged to create events and promote community connectedness. A range of events, workshops and programs are provided throughout the year.
- Ginninderry's stakeholder groups also encourage community ownership and responsibility through co-design and regular involvement in the design and operation of the community.
- Community Facilities: The Link – Ginninderry's multipurpose community facility encourages community connectedness by providing an accessible community event venue alongside Art exhibition space and Ginninderry's Project Office. Weekly events run at The Link include Ginninderry Choir, yoga and playgroup.
- Ginninderry's Residents Resources website^{xvii} has been up and running since December 2019 (prior to residences moving into Ginninderry in February 2020). The website includes information on Emergency Preparedness including emergency contacts, guidance on planning and responding to emergencies (including natural and man-made emergencies). (Risk 7) For more information please see Annexure 2.

These engagements promote community connectedness and resilience (Risk 3, Risk 7, Risk 13, Risk 14, Risk 15, Risk 16, Risk 20, Risk 21, Risk 25)

Future Risk Treatments

Through consultation and risk assessments, the following treatments have been identified as future treatments to further reduce the above risks associated with climate change and will be assessed for future stages within Ginninderry.

- NatHERS 7 minimum requirement for Neighbourhood 2 to be included within Ginninderry's Housing Development Guidelines. Increasing the minimum NatHERS rating reduces the heating and cooling load on a home (Risk 1, Risk 2, Risk 3)
- Light/Medium Roof colours requirement for Neighbourhood 2 to be included within Ginninderry's Housing Development Guidelines (Risk 1, Risk 2, Risk 3)
- Collaboration with Peak Bodies including Master Builders Association and National Association of Women in Construction on the impacts of heat stress, heat stroke and construction safety (Risk 4)
- Materials selected with greater assessment of high temperature scenarios/ climate change applications included (Risk 6)
- Air Leakage Testing and rectification to be required in Ginninderry Display Village 2 (Risk 21)
- Host Emergency Services Agency outreach during community events (Risk 3, Risk 7, Risk 13, Risk 14, Risk 15, Risk 16, Risk 20, Risk 21, Risk 25)
- A review of the Ginninderry Residents Resources Page to include any updated factsheets, checklists, and guidance from the ACT ESA.
- Further engagement with TCCS to ensure greater maintenance/appreciation of Living Infrastructure.
- Explore opportunities to incorporate wading pools, misters and emergency buttons in public places (Risk 3)
- Develop a Climate-Wise garden demonstration showcasing climate appropriate plantings and landscapes (Risk 11)

Annexures

Annexure 1 - Risk Assessment

Ginninderry's Risk Assessment Matrix has been used to assess all risks associated with climate change

Risk likelihood rating

Risk *likelihood* is the chance or probability of an event occurring.

Some events happen once in a lifetime. Others can happen almost every day. Analysing risk requires an assessment of their frequency of occurrence. The following table provides broad descriptions used to support likelihood ratings. The occurrence should be judged without reference to known controls, as these are assessed later in the process in terms of their existence and effectiveness.

| Rating | Likelihood of occurrence |
|-------------------------|---|
| 5 Almost certain | The event will occur in most circumstances (i.e. within three years) |
| 4 Likely | The event will probably occur in most circumstances (i.e. within three years) |
| 3 Moderate | The event may occur within the foreseeable future or medium term (i.e. within the next three years) |
| 2 Unlikely | The event may occur at some time but not likely to occur in the foreseeable future (i.e. not within the next three years) |
| 1 Rare | The event will occur in exceptional circumstances or as a result of a combination of unusual events |

The following questions considered when assessing the likelihood of each identified risk:

Complexity – How complex is the risk or process in terms of multiple tasks or technology? Consider the complexity of the underlying processes or environment in which the Ginninderry project operates.

Susceptibility – How susceptible or vulnerable is the Ginninderry project to the risk (new people or processes, number of stakeholders involved, high level of interaction etc)?

History – To what extent is the risk known to have occurred (either within the Ginninderry project or the known, relevant environment)?

Risk Consequence

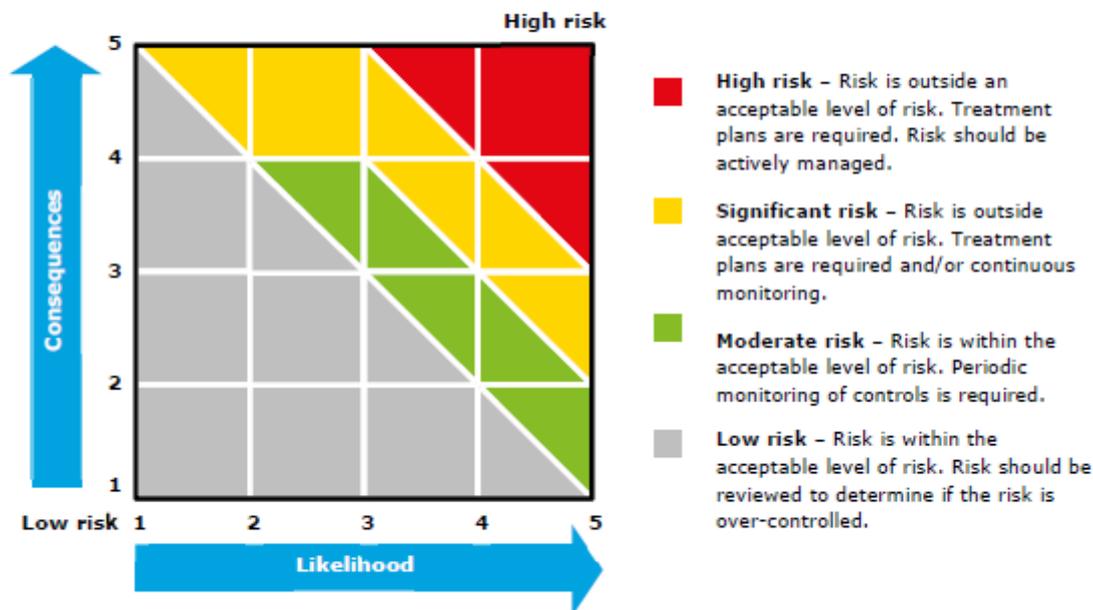
Key Risk Management Framework Elements

| Criteria | | Financial ¹ | Business Continuity & Performance | Regulatory/Legal | Reputation & Image | Health & Safety | Environment & Stakeholders | Human Resources |
|-----------------|---|---|--|---|--|--|--|---|
| Rating | | | | | | | | |
| Extreme | 5 | Reduction in project profit by \$5m or more. | Major delay to project which significantly impacts on cash flow for more than six months. Major adverse quality problem or bankruptcy of contractor/builder. | Significant legal, regulatory or internal policy failure e.g. severe sanction received. | Ongoing national/regional media exposure. Extensive ongoing publicised attention from numerous or significant key stakeholders. | Loss of life or permanent incapacitation of staff, agents or public. | Extreme environmental harm likely to be irreversible. External stakeholder outrage. | Unplanned loss (or extended absence) of the Project Director and senior team member/s in combination. |
| Major | 4 | Reduction in project profit by \$2 - 5m. | Major delay to project which significantly impacts on cash flow for two to six months. | Major legal, regulatory or internal policy failure e.g. major sanction received. | Extensive ongoing local media exposure. Repeated ongoing publicised attention from numerous or significant key stakeholders. | Serious injury or incident which requires hospitalisation; incomplete rehabilitation achieved. | Major environmental damage that can be rectified. High profile external stakeholder concerns raised. | Unexpected loss (or extended absence) of the Project Director and/or Project Manager. Unplanned loss and/or bankruptcy of contractor. |
| Moderate | 3 | Reduction in project profit by \$1 - 2m. | Delay to project of one to two months. Some reduction in performance. | Limited legal, regulatory and internal policy failure e.g. sanction received. | Isolated local media exposure. Attention from a limited number of key stakeholders with restricted publicity. | Injury or incident requiring medical attention with full rehabilitation achieved. | Environmental harm. External stakeholder concerns/ complaints requiring rectification. | Unexpected loss (or extended absence) of a key member of the project team with specialist knowledge without which the business is significantly affected. |
| Minor | 2 | Reduction in project profit by \$500k - \$1m. | Project delay of one month or less. Loss of operational systems. | Minor legal, regulatory and internal policy failure e.g. minor sanction received. | Local media exposure. Isolated attention from one key stakeholder or a number of minor stakeholders with little or no publicity. | Minor injury or incident which requires medical treatment and loss time >1 week. | Immaterial environmental/ community issue requiring some action. | Unexpected loss (or extended absence) of a single team member. |
| Notable | 1 | Negligible reduction in project profit. | Loss of operational or other systems for one week or less. | Insignificant legal, regulatory or internal policy failure. No external sanction imposed. | No media exposure. Isolated attention from a minor stakeholder with no publicity. | Minor incident requiring medical attention. | Incident that is notified to management and/or regulator but does not require action. | Short-term loss of resources to the project. |

Inherent risk assessment

Consequences are the outcomes of a risk event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.

The combined ratings for likelihood and consequence for each risk are then aligned in the matrix below to determine the inherent risk ranking.



Identification and assessment of mitigating practices and controls

Mitigating practices and controls include all the policies, procedures, practices and processes in place to provide reasonable assurance of the management of the Ginninderry project.

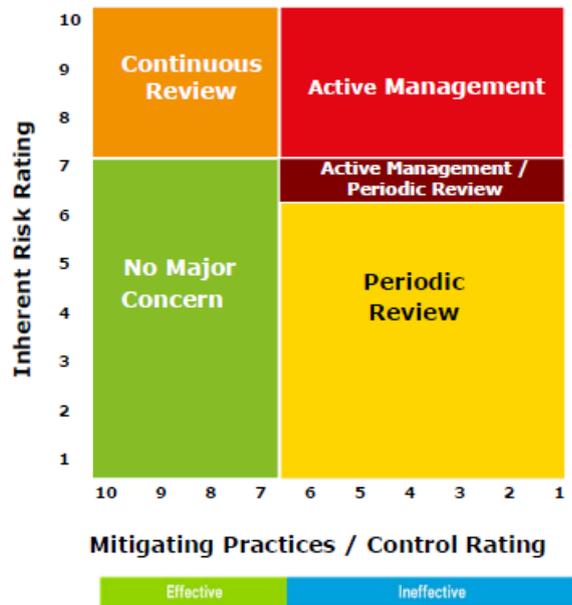
Where mitigating practices/controls exist but are not being followed and monitored, then adequate control does not exist, as in order for mitigating practices/controls to be effective they also must be communicated, actioned and monitored. Therefore a rating at or below 5 was applied in these instances.

| Rating | Measure | Definition | Characteristics |
|-------------|---------|---|---|
| Effective | 9 or 10 | Excellent Risk management systems, process controls and procedures in place and <u>can be relied upon to prevent risk materialising.</u> | <ul style="list-style-type: none"> Risk management systems, processes and procedures are formally documented, current and well understood by staff Management ensures compliance with risk management policy and procedures Management formally and proactively monitors risk and risk triggers Effectiveness of controls are formally reviewed and monitored by responsible management on a regular basis Management activity promotes a strong control environment Staff are adequately trained in risk management practices Ownership for the controls is clearly defined through formal KPIs or equivalent. <p>Nothing more to be done, except review and monitor the existing controls. Controls are well designed for the risk; address the root causes and management believe they are effective and reliable at all times.</p> |
| | 7 or 8 | Good Risk management systems, process controls and procedures in place and can be relied upon to mitigate or detect risk materialising <u>in most circumstances.</u> | <ul style="list-style-type: none"> Formal documentation of key risk management systems, processes and procedures and are understood by staff Management has identified, understands and monitors risks, however, risk monitoring is less structured Risk response management action plans are identified and management ensures that controls are operating as defined, although no formal measurement of effectiveness of controls Management actively promotes a strong control environment. <p>Most controls are designed correctly and are in place and effective. Some more work to be done to improve operating effectiveness or management doubts about operational effectiveness and reliability.</p> |
| Ineffective | 5 or 6 | Moderate Majority of risk management systems, process controls and procedures in place. <u>Basic risks will be controlled some of the time.</u> However, scope exists to improve controls. | <ul style="list-style-type: none"> Formal documentation of some risk management systems, processes and procedures and are reasonably understood by staff Management has identified and understand the risks, but risk monitoring is informal Promotion of control environment is informal Risk management action plans are informal. <p>While the design of controls may be largely correct in that they treat most of the root causes of the risk, they are not currently very effective or some of the controls do not seem correctly designed in that they do not operate at all effectively.</p> |

| Rating | Measure | Definition | Characteristics |
|--------|----------------|---|---|
| 3 or 4 | Weak | Basic risk management systems, process controls and procedures in place. <u>No guarantee risk will be controlled.</u> | <ul style="list-style-type: none"> Some informal documentation of specific risk management systems, processes and procedures exist Staff are not fully aware of nor understand controls to manage risk. <p>Significant control gaps. Either controls do not address root causes or they do not operate effectively.</p> |
| 1 or 2 | Unsatisfactory | Controls do not exist or else are not operating effectively. <u>Risk will not be controlled.</u> | <ul style="list-style-type: none"> No controls exist to manage risks or else are ineffective No clear ownership for managing the risk. <p>Virtually no credible control. Management has no confidence that any degree of control is being achieved due to poor control design or very little operational effectiveness.</p> |

Residual risk matrix

Residual risk is the level of risk that remains within the Ginninderry project after consideration of all existing mitigants/controls. The Residual Risk Matrix below provides the Ginninderry project team with a guide as to the required level of management attention and when treatment plans should be developed.



- **Active Management** – Risks where current treatment options require preparation, active review and management on an ongoing basis.
- **Active management / Periodic Review** – Requires active management where consequence is rated 4 or higher.
- **Continuous Review** – Control is adequate, continued monitoring of controls to confirm this, i.e. at least quarterly.
- **Periodic Review** – Control is not strong but risk consequence is not high. Options to improve control or monitor risk consequence to ensure it does not increase over time.
- **No Major Concern** – Risks where systems and processes managing the risk are adequate. Consider excess or redundant controls.

Annexure 2 - Emergency Preparedness

Emergency Ready

The following information is provided publicly on Ginninderry's Resident's Resources webpage.

Ginninderry Staff Contact

Tulitha King - Ginninderry's Community Development Manager- tulitha@ginninderry.com.

Access to all other Staff through The Link – Ginninderry's onsite project office

Residents Connection

Strathnairn Locals Facebook Page <https://www.facebook.com/groups/strathnairnlocals/>

External Contacts and education resources

ACT Emergency Services Website: <https://esa.act.gov.au/>

Red Cross RediPlan – Disaster Preparedness Guide: <https://www.redcross.org.au/getmedia/b896b60f-5b6c-49b2-a114-57be2073a1c2/red-cross-rediplan-disaster-preparedness-guide.pdf.aspx>

Triple Zero contacts page: triplezero.gov.au

Fires Near Me app: <https://www.rfs.nsw.gov.au/fire-information/fires-near-me>

Preparing an Emergency Plan

What To Do

- Prepare an emergency plan for when an emergency takes place.
- Keep the emergency plan on display in your home or business, make sure all family members or employees are familiar with the plan and practice once every year.

Your plan may include these steps:

- pick two meeting places in safe locations and plan how you would get to each place
- choose a household member to take control during an emergency event and to act as the contact person
- prepare an emergency kit and store the kit in a waterproof container in a safe place – see Emergency Kit Checklist
- listen for warnings – tune into a local radio station or television station or monitor the Bureau of Meteorology website
- dial 000 if you are in a life-threatening emergency, 112 if there is no mobile phone coverage, or 106 if you have a speech or hearing impairment (triplezero.gov.au)

- secure your premises and turn off gas, electricity and water connections
- act on the advice of emergency personnel and evacuate if instructed to do so
- list the household or business members who have not been contacted

Where to go

If your home or business is in immediate danger act on your emergency plan, grab your emergency kit and go to one of your chosen meeting places. Let your neighbours know where you are going and take your pets with you.

If an official evacuation is necessary, an emergency services person may contact you and advise you:

- when you will need to evacuate
- where the evacuation centres are located and which one you are to go to
- (register at the evacuation centre if advised to do so even if you do not intend to stay there)
- how to get to the evacuation centre
- who is able to assist you
- where you can access more information about the event
- for how long you are likely to be affected by the emergency

Keep listening to your local radio station and stay calm.

Emergency Kit Checklist

What to include in your kit:

| | |
|--------------------------|----------------------|
| • Portable Radio | • Torch |
| • Spare Batteries | • First Aid Kit |
| • Candles | • Waterproof Matches |
| • Spare House Keys | • Insect Repellent |
| • Sunscreen | • Utility Knife |
| • Copy of Emergency Plan | • Local Map |

Evacuation Checklist

In addition to the above, if you have to evacuate (and if there is adequate time to do so), add to your kit:

| | |
|---|---|
| • Important Documents: Driver's license, passports & insurance papers | • Computer data back-up disc or flash drive |
| • Mobile phone and charger | • Food & water |
| • Reading glasses | • Regular medicines and prescriptions |
| • Valuable items, such as jewellery | • Pets and pet food |
| • Clothing and footwear | • Toiletries |
| • Photos or hard-drives | |

Specific Bushfire Advice

(this information was adapted from the NSW Rural Fire Service [website](#))

To report a fire emergency

- Call Triple Zero (000)
- If you are deaf or have a speech or hearing impairment call 106

For information on fires

- Check our Fires Near Me page for current incidents
- Listen to local media
- Check social media such as [NSW RFS Facebook](#) and [NSW RFS Twitter](#)
- Bush Fire Information Line – 1800 679 737
- If you are deaf, hard of hearing or have a speech impairment, contact us through the National Relay Service
- TTY users phone 1800 555 677 then ask for 1800 679 737
- Speak and Listen users phone 1800 555 727 then ask for 1800 679 737
- Internet relay users connect to the NRS then ask for 1800 679 737
- To report a fire or emergency (TTY users only), access TTY 106.

What to do during a fire

Remember

- Follow your [bushfire survival plan](#). If you do not have a bush fire survival plan, ensure you know what you will do before, during and after the fire.
- Remember – leaving early is your safest option.

Before the fire

- Put on your protective clothing
- Turn on the radio to keep yourself informed
- Bring pets inside and keep them in one room
- Close all windows and doors
- Block spaces beneath doors and windows with wet towels
- Fill buckets, sinks and bath tubs with water ready to put out spot fires
- Have your firefighting equipment like pumps and hoses connected to your water supply
- Block downpipes and fill gutters with water
- Remove items which can burn from around your home, such as outdoor furniture
- Bring ladders inside to check roof space for embers
- Patrol the outside of your home putting out any embers or spot fires
- Just before the fire arrives, wet down timber decks and gardens close to the house
- Move any firefighting equipment to a place where it will not get burnt

During the fire

- Go inside but stay alert
- Shelter in a room on the opposite side of the house from the approaching fire and one that has a clear exit out of the house
- Patrol inside the house, including the roof space looking for sparks and embers
- Protect yourself from the heat of the fire
- If your life is at risk, call triple zero (000)

Once the fire has passed

- Check your roof spaces
- Go outside and put out any part of your house which is alight
- Check under the house and any decks
- Check on your pets and animals
- Embers or sparks can start spot fires for many hours after the fire has passed
- If you can, contact your family and friends and check on your neighbours

Since establishing the Ginninderry Resident Resources Page, the ACT Emergency Services Agency has published a suite Emergency Preparedness Checklists and Templates. These should be linked directly in the next website update.

These include:

[Bushfire Ready Factsheet](#)

[Bushfire Survival Plan](#)

[Emergency Survival Plan](#)

[Survival Plan Discussions Guide](#)

[Home Emergency Kit Checklist](#)

[Home Fire Escape Plan](#)

Important Numbers

In a Crisis

In a life threatening emergency, day or night, call Emergency Triple Zero – 000 – for Police, Fire or Ambulance.

Contacts in a crisis

| | | | |
|-----------------------------------|---------------------------|--------------|---|
| Injury or health crisis | Ambulance Service | 000 | ambulance.nsw.gov.au |
| Motor Vehicle Accident | ACT Police | 000 | police.act.gov.au |
| Household fire or HazMat incident | Fire & Rescue | 000 | esa.act.gov.au/actfr/ |
| Bushfire | Emergency Services Agency | 000 | esa.act.gov.au/actrfs/ |
| Storm/flood | Emergency Services Agency | 132 500 | esa.act.gov.au |
| Storm/flood/bushfire (NSW) | Rural Fire Service | 1800 679 737 | www.rfs.nsw.gov.au/fire-information/fires-near-me (also on the App store) |
| Police Assistance Line | ACT Police | 131 444 | police.act.gov.au |
| Crime Stoppers | Crime Stoppers | 1800 333 000 | act.crimestoppers.com.au |

For Information

| | | | |
|--|--------------------------------------|--|--|
| Local Police Station | Belconnen Police Station | Cnr Benjamin Way and Market Street, Belconnen ACT 2617 | police.act.gov.au |
| Flood, storm warnings | Bureau of Meteorology | | www.bom.gov.au/act/ |
| | Emergency Services Agency | 13 22 81 | esa.act.gov.au |
| Bushfire | Emergency Services Agency | (02) 6207 8609 | esa.act.gov.au rfs.nsw.gov.au/fire-information/fires-near-me |
| Power Outages | Evo Energy | 13 10 93 | evoenergy.com.au |
| Water & Sewage | Icon Water | 02 6248 3111 | iconwater.com.au |
| Poisons Information Hotline | Poisons Information Hotline | 13 11 26 | poisonsinfo.nsw.gov.au |
| Lifeline | Lifeline | 13 11 14 | act.lifeline.org.au |
| Road closures & Storwater | Transport Canberra and City Services | 13 22 81 | tccs.act.gov.au/ |
| Road closures on the National Capital Authority land | National Capital Authority | 02 6271 2888 | nca.gov.au |
| Radio Stations | ABC 666 | AM 666 | abc.net.au/radio/canberra |
| Emergency Health Services | Calvary Hospital | 02 6201 6111 | calvarycare.org.au |
| | Canberra Hospital | 02 5124 0000 | health.act.gov.au/hospitals-and-health-centres/canberra-hospital |
| Bushfire Ready | Emergency Services | 13 22 81 | esa.act.gov.au/bushfireready |

Annexure 3 - Endnotes

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- ⁱ State of the Climate, Australian Government Bureau of Meteorology and CSIRO, 2018, available at <http://www.bom.gov.au/state-of-the-climate/>
- ⁱⁱ State of the Climate, Australian Government Bureau of Meteorology and CSIRO, 2020, available at <http://www.bom.gov.au/state-of-the-climate/>
- ⁱⁱⁱ *ibid.*
- ^{iv} Australian Capital Territory: Climate Change Snapshot, NSW and ACT Regional Climate Modelling project (NARClIM), NSW Government and ACT Government, 2014, available at <https://www.environment.act.gov.au/cc/adapting-to-climate-change/local-climate-change-impacts>
- ^v *ibid.*
- ^{vi} *ibid.*
- ^{vii} ACT Climate Change Strategy 2019-25, Australian Capital Territory, 2019, available at <https://www.environment.act.gov.au/cc/act-climate-change-strategy>
- ^{viii} NARClIM NSW Climate Projections Interactive Map: ACT Summary of 2030, accessed May 2021, available at <https://climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Interactive-map#>
- ^{ix} Local Climate Change Impacts, Australian Capital Territory, accessed May 2021, available at <https://www.environment.act.gov.au/cc/adapting-to-climate-change/local-climate-change-impacts>
- ^x Territory Wide Risk Assessment, ACT Government Emergency Services Agency, 2017, available at <https://esa.act.gov.au/about-esa/publications>
- ^{xi} ACT Climate Change Strategy 2019-25, Australian Capital Territory, 2019, available at <https://www.environment.act.gov.au/cc/act-climate-change-strategy>
- ^{xii} Canberra's Living Infrastructure Plan, Australian Capital Territory, 2019, available at <https://www.environment.act.gov.au/cc/act-climate-change-strategy/keeping-our-city-cool>
- ^{xiii} Territory Wide Risk Assessment, ACT Government Emergency Services Agency, 2017, available at <https://esa.act.gov.au/about-esa/publications>
- ^{xiv} ACT Climate Change Adaptation Strategy: Living with a Warming Climate, Australian Capital Territory, 2016, available at <https://www.environment.act.gov.au/cc/act-climate-change-strategy>
- ^{xv} Work Health and Safety Management Plans, WorksafeACT, accessed May 2021, available at <https://www.worksafe.act.gov.au/health-and-safety-portal/safety-by-industry/building-and-construction/work-health-and-safety-management-plans>
- ^{xvi} Strathnairn Locals Facebook Group, accessed May 2021, available at <https://www.facebook.com/groups/strathnairnlocals/>
- ^{xvii} Ginninderry Resident Resources website, accessed at May 2021, available at <https://residents.ginninderry.com/>