Department of Planning and Environment

Snowy Mountains Special Activation Precinct

Ecologically Sustainable Development (ESD) Plan

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Our vision is to think beyond the square.

Our mission is to reduce the impact on the environment of our client's actions by providing innovative solutions, challenging perceived thinking, and pushing the boundaries of achievement whilst using all resources in a sustainable way.

We confirm that all work has been undertaken in accordance with our ISO 9001 accredited quality management system.

Contents

Executive Summary

The following key ESD themes and strategies were identified within the ESD technical report to provide long term sustainable outcomes for the Snowy Mountains SAP. These strategies align with the vision for the Snowy Mountains to be an international leader in sustainable development for tourism-based communities. These strategies are integrated into the Snowy Mountains SAP Structure Plans and will be supported by the Masterplan and Delivery mechanisms as the project progresses.

Key ESD Moves

The following key moves and initiatives were identified to embed ESD principles in the design and implementation of the Snowy Mountains SAP.

Topic	Key ESD Moves
Climate Resilience	• Transition resorts most vulnerable to climate change to alternatives to snow-based tourism, by developing year-round growth scenarios for the resorts. • Implement urban design, infrastructure and building standards to increase climate resilience.
Emissions	• A framework for reducing emissions is developed in line with the NSW Government targets, with options for energy efficiency, renewable energy and circular economy opportunities to meet the carbon negative target. • Emissions calculators are used to test development scenario's to plan zero emissions pathways for development.
Energy	• Develop opportunities for 100% renewable Power Purchase Agreements (PPA's) to enable redevelopment projects to be powered by renewable energy and to enable existing developments to be decarbonised over time. • Support solar PV and battery storage systems on a smaller scale to support individual developments where viable. • Integrate energy efficiency and productivity into development design guidelines, with whole of lifecycle emissions considered.
Environment	• Touch the ground lightly is the overarching development strategy for new buildings and infrastructure. • Green Infrastructure to be embedded in urban design. • Develop existing buildings and previously developed sites, including the old Snowy village and previously developed areas around Jindabyne. • Consider the environmental impacts of all proposed new infrastructure and building development, and develop sustainable design principles and benchmarks for the region.
Society	• Prioritise community and visitor health and wellbeing through inclusion of wellbeing principles in all development. • Develop opportunities for 'wellness' tourism and eco-tourism. • Create opportunities for social infrastructure. • Celebrate heritage, inclusion and diversity.
Mobility	• Works towards a fully integrated transport model across the Snowy Mountains SAP, prioritising Park and Ride facilities for access to Kosciuszko National Park and key development areas. • Promote zero emission transport and infrastructure, and prioritising public transport options within the Snowy Mountains SAP. • Prioritise walking and cycling infrastructure to create a 20-minute connected Jindabyne town.
Circular Economy	• Support waste management and recycling infrastructure. • Promote circular economy relationships between Snowy Mountains SAP businesses.
Water	• An integrated water cycle is estabilised based on water sensitive urban design (WSUD) principles, including better management of stormwater quality and quantity. • New water infrastructure and urban planning to incorporate water sensitive urban design. • Wastewater treatment systems in the alpine areas to be upgraded to closed loop systems with no pollution to alpine streams.. • Build water capture and reuse infrastructure for all new developments.
Leadership	• Develop an overarching Environmental Management System (EMS) for all development within the Alpine precinct, which is integrated with the Snowy Mountains SAP Carrying Capacity Framework, Kosciuszko National Park Plan of Management (PoM) and resort EMS's. • Encourage new developments within the Snowy Mountains SAP to develop an EMS to control the environmental aspects of the development. • Develop a framework for sustainable design and certification of new development and building assets.

The ESD Plan summarises how each of these are to be delivered through the masterplan and relevant legislative pathways.

Introduction

This is the Ecologically Sustainable Development (ESD) Plan for the Snowy Mountains Special Activation Precinct (SAP). The ESD Plan consolidates the work undertaken during the development of the Snowy Mountains SAP ESD Technical Report and Structure Plan, and summarises the recommended strategies for the following ESD Themes:

Theme	Relevance
Climate Resilience	Climate resilience is critical to ensure that the community understands and can respond to a changing climate.
Emissions	The Snowy Mountains SAP vision is to be carbon negative, offsetting more emissions than are produced in the region.
Energy	Delivery of secure, affordable, low carbon energy to support a carbon negative region.
Environment	The natural alpine environment needs to be conserved and enhanced for all to enjoy.
Society	Prioritise health, wellbeing and liveability for the benefit of the local community and to attract new tourism.
Mobility	Active and sustainable transport can create a new transport model to and from the region.
Circular Economy	Embedding a circular economy approach to maximise resource efficiencies and reduce waste generation.
Water	Green infrastructure is developed to support the natural water cycle.
Leadership	Demonstrate leadership in sustainable development with an internationally recognised sustainability framework.

Figure 1: Summary of ESD Themes

The Snowy Mountains SAP vision and aspirations are very well defined and provide an inspiring basis for the ESD Plan. The ESD and wellness aspects of the vision include a precinct that will:

- be a national leader in environmental resilience and sustainability;
- protect the environment of the Snowy Mountains, including ongoing conservation of Kosciusko National Park;
- implement a best practice carrying capacity framework with an ISO14001 certified Environmental Management System to ensure sustainable management;
- focus on providing year round, nature-based eco-tourism opportunities;
- manage climate change risks and improve climate resilience.

The ESD Technical Study provided an in-depth analysis of the opportunities, constraints and vision under each of the key themes. This ESD Plan summarises the research undertaken to date to identify ESD opportunities and constraints for the region, which have been used to inform ESD initiatives identified in this report. It encompasses feedback on the draft Technical Report from the client group, and feedback from the Strategic Framework sessions and from extensive public exhibition and consultation over the 12 months since the initial ESD report was released.

Figure 2: Snowy SAP ESD themes and outcomes at a glance

This Plan has been prepared to summarise the key opportunities under each of these key themes for integration in to the three Snowy Mountains SAP precincts within the masterplan. The Plan identified how these will be delivered within the Governance framework of the following delivery mechanisms:

- Jindabyne Growth Precinct Development Control Plan/s
- Jindabyne Catalyst Precinct Delivery Plan/s
- Alpine Precinct Development Control Plan

The majority of the ESD initiatives discussed in this Plan apply to development in the whole SAP area. Where initiatives apply only to one of the precincts this is noted in the delivery plan in Appendix A.

ESD Framework

A detailed analysis of ESD frameworks and rating tools has been undertaken to identify opportunities for the Snowy Mountains SAP to achieve an internationally recognised accreditation that can be used to celebrate the strong ESD focus, while also attracting investment and driving growth.

As a result of this assessment, the following precinct frameworks and rating tools are recommended for the Snowy Mountains SAP:

- An accredited ISO 14001 Environmental Management System (EMS) all development the Alpine Precinct, which is integrated with the Snowy Mountains SAP Carrying Capacity Framework, Kosciuszko National Park Plan of Management (PoM) and resort EMS's.
- Develop an EMS template and resources to encourage new and existing developments within the Jindabyne Growth and Catalyst precincts to adopt an EMS where viable.
- Develop a Governance structure and online portal to enable the reporting of key emission sources for all new developments within the SAP (mandatory). Over time existing businesses with the SAP could voluntarily join this portal.
- Develop a framework for sustainable design and certification of new development and building assets throughout the Snowy Mountains SAP, to ensure new development is benchmarked against leading sustainable development standards.

Figure 3: Alpine Precinct EMS

ISO 14001 Environmental Management System

It is recommended that a certified Alpine Precinct ISO 14001 Environmental Management System is implemented to embed a holistic framework which integrates the carrying capacity framework and KNP PoM. This will ensure that all development within KNP is measured, monitored and controlled to manage environmental impacts and promote sustainable development opportunities.

Individual developments within the Jindabyne precincts should be encouraged to utilise the EMS system to manage the environmental impacts of ongoing operations and to provide a framework to track and record emissions over time.

Where individual developments do not develop an EMS they should be required to track key emission sources annually (energy, water, waste, transport) as a minimum.

Sustainable Certifications

Individual developments and buildings should be encouraged to investigate and apply a sustainable design framework to benchmark the sustainability aspects of the development. The following diagram illustrates the range of sustainable design frameworks and certification tools available for developments within the SAP to consider.

The following diagram illustrates how this could apply to developments and businesses throughout the Snowy Mountains SAP:

Figure 4: ESD Framework

Outcome: An adaptable community resilient to climate change

The Snowy Mountains SAP vision includes a specific aim to become a carbon negative, climate positive precinct which is directly reliant on understanding the climate and potential impacts of climate change. To ensure that the project plans for a changing climate and incorporates adaptation and resilience measures, this section outlines the known climate change impacts for the region and potential opportunities to mitigate or take advantage of these changes to create a climate positive outcome.

The Snowy Mountains SAP is located within the South East and Tablelands region. There are a number of climate change risks and impacts already identified as part of the AdaptNSW Climate Change Snapshot and Enabling Adaptation in the South East (EASE) reports.

These projections are based on the NSW and ACT Regional Climate Modelling (NARCliM) Project and have continued to be developed and improved by the DPE Environment, Energy and Science team. As a result of these projections, there are a number of climate change impacts which are expected to be directly relevant to the Snowy Mountains SAP including the below main impacts (refer below table). A detailed Snowy Climate Change Assessment has been undertaken to identify climate risks in detail and allow for effective planning to mitigate the risks.

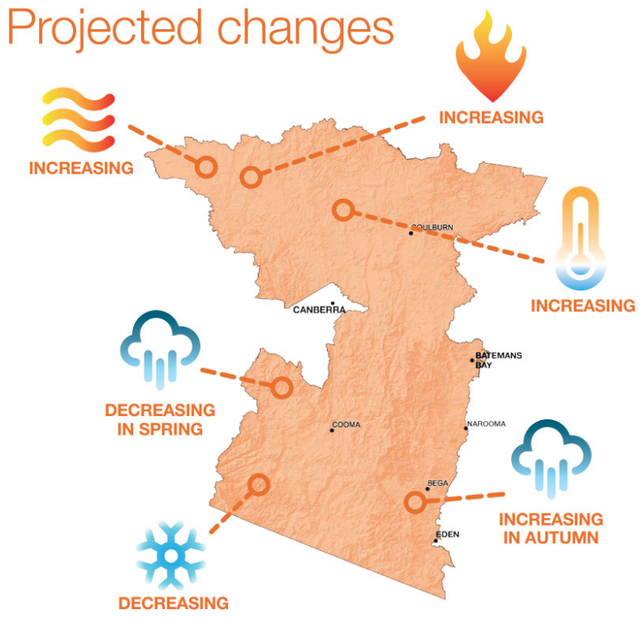

Figure 5: AdaptNSW Climate Change Snapshot report

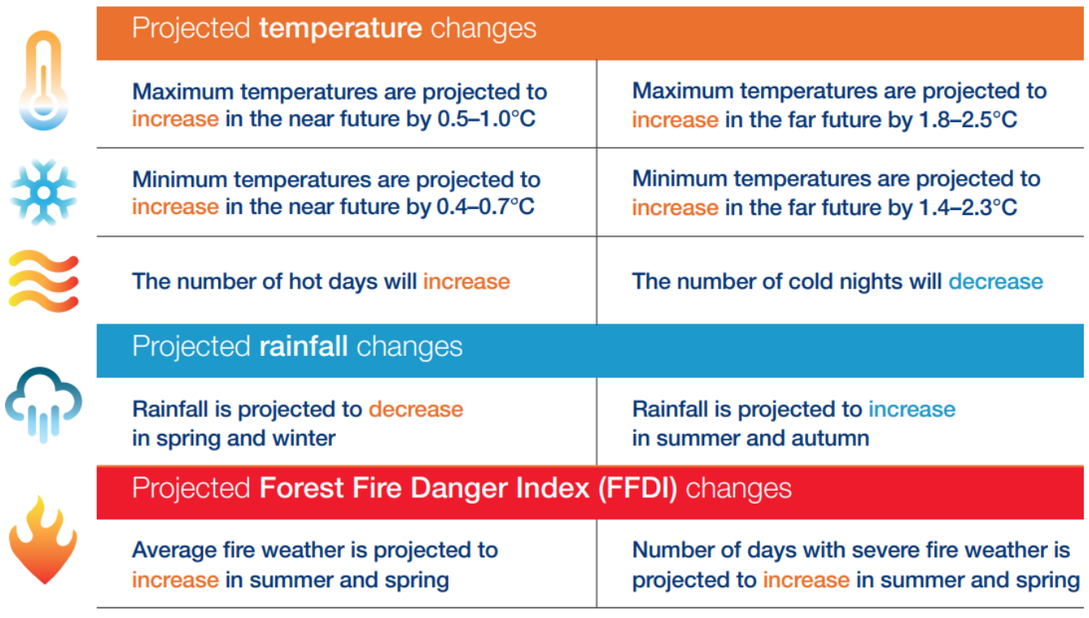

Figure 6: AdaptNSW Climate Change Projections

Climate change risk	Climate change projection 2070	**Jindabyne and surrounds** Most significant impacts	**Alpine region** Most significant impacts
Temperature increase	Increase of 2.0 to 2.5°C	1. Change in species distribution in and around township, weed/pest invasions including mosquitos, decline in biodiversity and natural amenity including fishing	1. Increased utility infrastructure demand (electricity and water) for snow making, noting that Perisher Village is already at its water licence limit. 2. Decreased snow fields resulting in increased intensity of use of areas with snow, impacting amenity and user experience. This will also impact on SAP development infrastructure modelling and sizing, as lower-altitude locations lose snow-based visitation to higher-altitude locations in the mid-term 3. Faster snow melt reducing snow coverage, leading to an increase in snow making and salt/environmental impacts, or reducing length and financial viability of snow season

Climate change risk	Climate change projection 2070	**Jindabyne and surrounds** Most significant impacts	**Alpine region** Most significant impacts
Increased hot days 	12 to 32 days above 35°C	1. Heat stress for the community population, including residents and visitors (relative heat wave impacts) 2. Increased demand and utilisation of public infrastructure for respite e.g. lake foreshore and public/community buildings	1. Heat stress for the community population and in particular visitors using active tourism offerings that could be susceptible to increased hot days (e.g. hiking and mountain biking events).
Reduced annual rainfall 	10% reduction in average rainfall	1. Reduced water availability and potential conflicts with water use for hydro generation and other uses (e.g. snow making, consumption, water licences downstream of the township)	1. Reduced water availability and increased water storage requirements for alpine areas not connected to a mains water supply.
Reduced snow conditions 	60% reduction of suitable snowmaking conditions, a reduction of 35 to 40 days	1. Reduced winter tourism due to shorter and more intermittent snow seasons 2. Reduced tourism expenditure during winter impacting business financial viability and economic growth 3. Changed regional hydrology (rain instead of snow) and subsequent runoff in winter instead of spring, leading to ecosystems and threatened species disruption, recreational and social values and economy associated with the National Park	1. Changed regional hydrology (rain instead of snow) and subsequent runoff in winter instead of spring, leading to ecosystems and threatened species disruption, recreational and social values and economy associated with the National Park. 2. Change in and loss of biodiversity and ecology, including loss of alpine flora and fauna, snow gum die back, flora/fauna loss/migration, and other sudden unforeseen impacts. 3. Introduction of additional snow making facilities increases utility demand, greenhouse gas emissions, and salt and synthetic ingredient contamination/run off/ecology impacts.
Increased bushfire risk/intensity 	1 to 2 day increase in extreme fire weather days per annum, occurring in spring and summer.	1. Increased risk ratings and fire life safety standards for new and replaced infrastructure. 2. Damage/loss of utility infrastructure (electricity, water pumping stations, telecommunications). 3. Repeated bushfires and visual amenity impact reducing tourism, visitation and economic growth (directly as a result of a major bushfire, or indirectly as a result of clearing developable areas for fire safety zoning/RPZ) 4. Adverse mental health and economic recovery impacts of repeated bushfires	1. Increased risk ratings and fire life safety standards for new and replaced infrastructure. 2. Damage/loss of utility infrastructure (electricity, water pumping stations, telecommunications). 3. Damage/loss of indigenous and non-indigenous heritage (buildings, natural landscape, features etc) due to repeated and uncontrolled bushfire impacts. 4. Reduced tourism due to increased bushfire risk, in particular in KNP during summer. For example, tourist evacuation orders have been issued in the past significantly impacting the tourism industry. 5. Increased risk to tourists/campers/visitors in low communication areas (poor telecommunications).

Energy

Outcome: Powered by renewables

Increased tourism, development and the planned growth of the region will result in increased energy consumption, demand, emissions, and costs. In line with the NSW Electricity Strategy, National Energy Productivity Plan and emission reduction targets at both a state and federal level, the Snowy Mountains SAP will need to ensure that energy is effectively managed, and renewable energy maximised and reliability secured.

In particular, the Snowy Mountains SAP will need to align with the Net Zero Plan Stage 1: 2020-2030 which aims to reduce emissions by 50% by 2030 of which energy will be a key component.

The Snowy Mountains SAP is connected to the National Electricity Market (NEM) with significant generation assets, electrical infrastructure and renewable energy opportunities located within, in close proximity and in adjacent regions to the Snowy Mountains SAP. This includes:

- Hydro generation in the Snowy Mountains SAP (60MW Guthega Power Station on the boundary and 1.1MW Jindabyne Mini Hydro Power Station)
- Proposed South-West Renewable Energy Zone to the west of the Snowy Mountains SAP
- Snowy 2.0 and SnowyLink projects
- Improved interconnectivity to Victoria and South Australia via the Hume Link and Project Energy Connect
- Planned and potential renewable energy projects in and around the Snowy Mountains SAP.

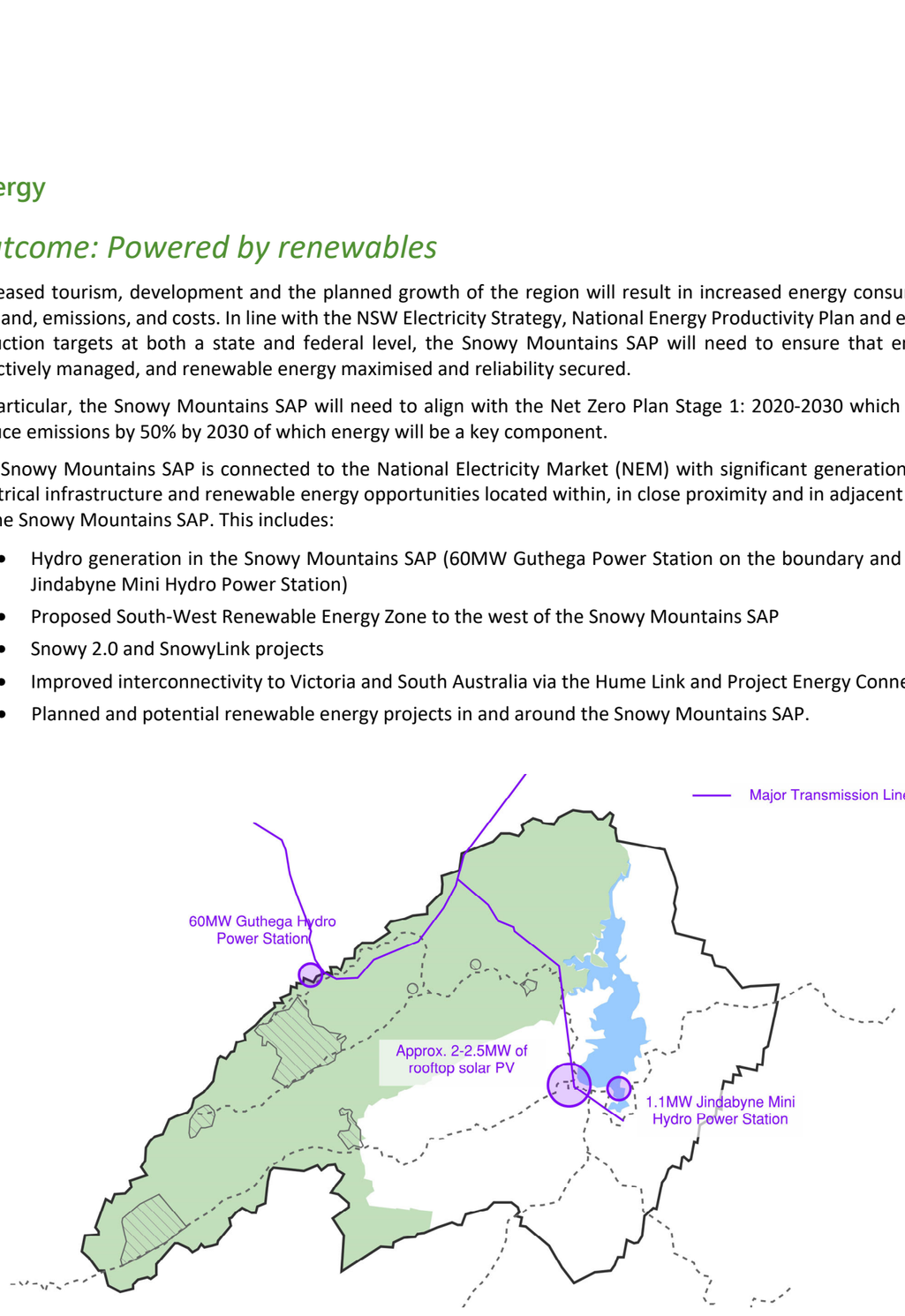

Figure 7: Energy Assets

To ensure the Snowy Mountains SAP takes advantage of the renewable energy opportunities and to improve energy security and reliability, planning will be required to ensure the Snowy Mountains SAP can:

- Access these resources both as part of physical infrastructure upgrades and by implementing innovative solutions to connect virtually
- Improve energy efficiency and peak demand management
- Integrating smart energy monitoring and control technologies
- support a transition from fossil fuels to renewable energy supplies; and
- improve energy security and reliability.

Key strategies to help deliver a low carbon, affordable energy system across the SAP include:

Energy efficiency opportunities:

- Integrate energy efficiency and productivity into Delivery Plan/s, Development Control Plan/s (DCPs) and design guidelines.

Renewable energy integration:

- Develop opportunities for 100% renewable Power Purchase Agreements (PPA's) to enable redevelopment projects to be powered by renewable energy and to enable existing developments to be decarbonised over time.

Energy storage:

- The integration of solar PV and battery storage systems on a smaller scale to support individual developments where viable.

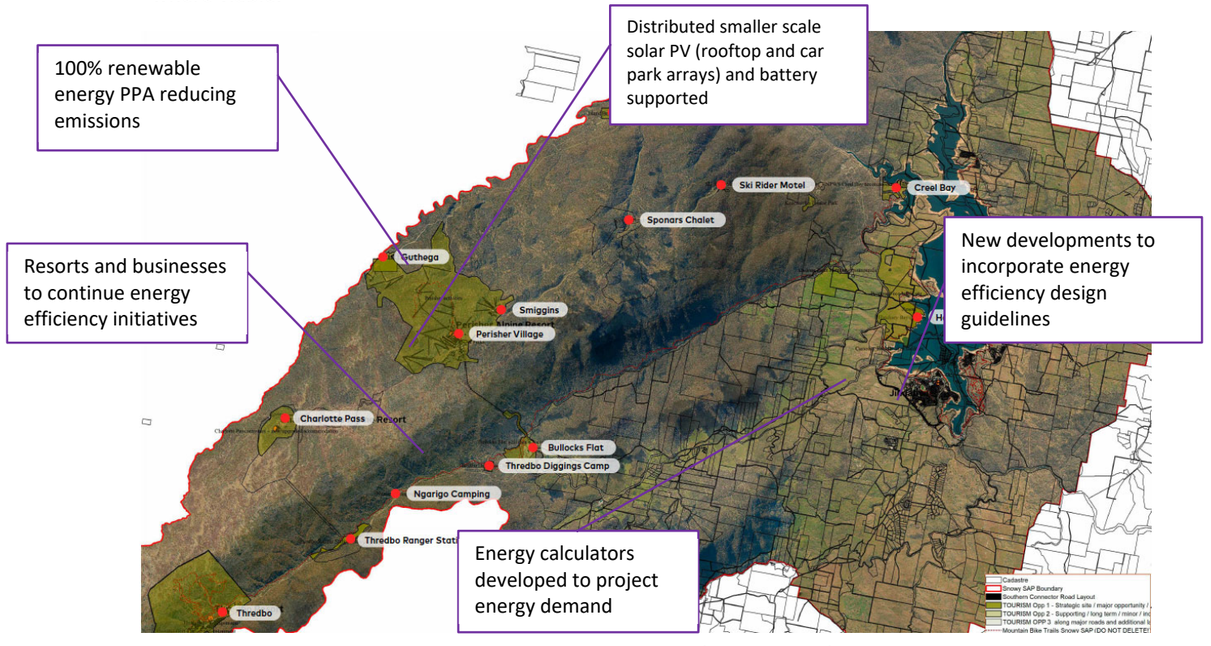

Figure 8: Energy initiatives in the Structure Plan

Environment

Outcome: Touch the ground lightly

Environmental conservation is a critical aspect of the overall Snowy Mountains SAP vision, where development and conservation must be aligned to allow the successful growth of the area. It is imperative that development of the region is carried out in an environmentally sustainable way, to minimise impact on this unique natural environment.

The environmental impact of new development in the region must be carefully considered to ensure that they are appropriately managed and mitigated. Opportunities to manage the environmental impact of new developments are summarised as follows.

Brownfield development

Where possible, development should occur within previously developed areas. This is important in KNP, but also in Jindabyne and surrounds, to preserve areas of vegetation around the town and lake and to reduce the environmental impact of new development. This is especially important due to the vision of the region to 'touch the ground lightly'.

Biodiversity

The rich biodiversity in the region supports ecosystem services and provides important educational and attraction opportunities. The conservation and ongoing protection of this biodiversity as climate change impacts affect the region is particularly important.

Given the interest in nature-based tourism and environmental awareness, biodiversity projects can benefit from eco-tourism experiences which offer hands-on opportunities for paying tourists as well as volunteers, students and community groups. Revegetation, wildlife rehabilitation and corridor building, regenerative agriculture, carbon offset planting and field surveying activities provide important educational and practical skill development opportunities which can not only appropriately aid environmental management, but also provide health and wellbeing benefits, connectivity and foster stewardship.

The 'leave no trace' movement (low impact ecotourism) can become the norm for not only the National Park but for the entire region, branding the area as an environmentally conscious and responsible destination. This premium brand can be further supported by appropriate development and planning and by adopting permaculture principles and whole-systems thinking. This can extend and connect the Snowy Mountains SAP's environmental and sustainability focus with linkages between people and the earth, focussing on regeneration which will aid not only biodiversity, but the achievement of a climate positive and carbon negative region.

Carrying capacity

A carrying capacity model will be used to manage all development within KNP, as described fully in the WSP Carrying Capacity report.

Environmental and ecotourism education

The diversity of landscapes, elevations, natural features, flora and fauna within Kosciusko National Park and the wider Snowy Mountains SAP area offer significant opportunities for health and education. Students can learn about natural systems and environmental sciences, ecotourism, sports and recreation, nature therapy, history and culture and a multitude of other practical skills. These skills may also prove useful for emergency response and defence field training, as well as sports training.

Regenerative building design

The built environment plays a substantial role with relation to impacts on and connection to the natural environment. To reflect the natural assets of the region, buildings within the Snowy Mountains SAP can utilise sustainable local natural materials, replicate natural forms and showcase sustainable design features. This ensures that they respect the character of the region, whilst offering aesthetically pleasing and practically comfortable spaces that are resource efficient and resilient to climate changes.

Encouraging all new infrastructure to take the natural environment into consideration with regard to aesthetics and climate change can ensure more sustainable buildings, with lower ongoing running costs. This offers a unique visitor experience whilst boosting local resilience.

All building design should consider modular and prefabricated design where possible to minimise the environmental impacts of construction.

Carbon sequestration

Within the Snowy Mountains SAP area, there are opportunities for carbon offsetting projects, mostly with vegetation-based sequestration. Sequestration is the removal of atmospheric carbon dioxide through biological processes in plants and trees. Regenerative agriculture and forestry can provide carbon offsetting activities, as well as supporting landscape restoration, food security and resilience to the impacts of climate change.

This has been further explored with WSP's biodiversity team, to establish carbon sequestration opportunities which also support the region's biodiversity and ecology alongside the biodiversity offsets required for the development.

Green Infrastructure

The climate of Jindabyne can be extreme, with cold winters and very hot days in summer. Working with the urban design team, green infrastructure projects are included in the Structure Plan, to reduce the heat island effect on the town and to make the community more resilient to climate change.

Summary

- 'Touch the ground lightly' is the overarching development strategy for new buildings and infrastructure.
- Green Infrastructure to be embedded in urban design.
- Develop existing buildings and previously developed sites, including the old Snowy village and previously developed areas around Jindabyne. All of the recommended development within KNP is within existing tourism and development areas.
- Develop design guidelines for all new infrastrucutre and buildings in accordance with the sustainability framworks identified in the Leadership section of this report.
- Carrying Capacity is fully integrated with the Snowy Mountains SAP Alpine Precinct EMS with topics and Key Performance Indicators (KPI's) alinged for consistency.

Outcome: Reducing emissions beyond zero

The NSW Government has a commitment to Net Zero Emissions by 2050, and a 50% reduction in emissions by 2030, which includes a requirement for the NSW Government to be leaders in this transition. The Snowy Mountains SAP will go beyond this target to achieve a carbon negative outcome which will require emissions to be decoupled from productivity and support to transition to low carbon, high performing economy.

Achieving a carbon negative outcome by 2050 will only be possible with a proactive emissions reduction strategy including:

- The transition to electricity as the primary energy source, powered with renewable energy
- A significant increase and integration of renewable energy into NSW's electricity supply
- The transition to low emission transport for passenger and commercial vehicles to and within the SAP
- Improving business practices aligned with a circular economy model to reduce waste to landfill.

The following image summarises the emissions boundary and main emission sources for the Snowy Mountains SAP:

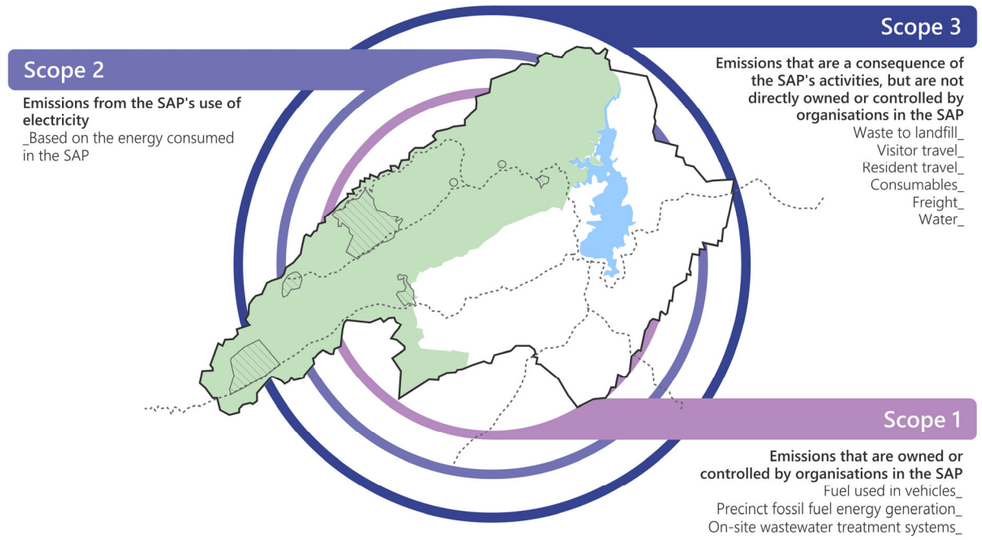

Figure 9: Snowy Mountains SAP Emissions Boundary Example

Snowy Mountains SAP emissions

An analysis of the top five emissions sources was undertaken based on the Snowy Monaro Regional Council's community emissions snapshot, with the below identified for the Snowy Mountains SAP:

Figure 10: Estimated Snowy Mountains SAP Emissions by Top Categories

Following the emissions boundary and sources being confirmed, the below diagram shows the pathway to reducing carbon emissions beyond zero:

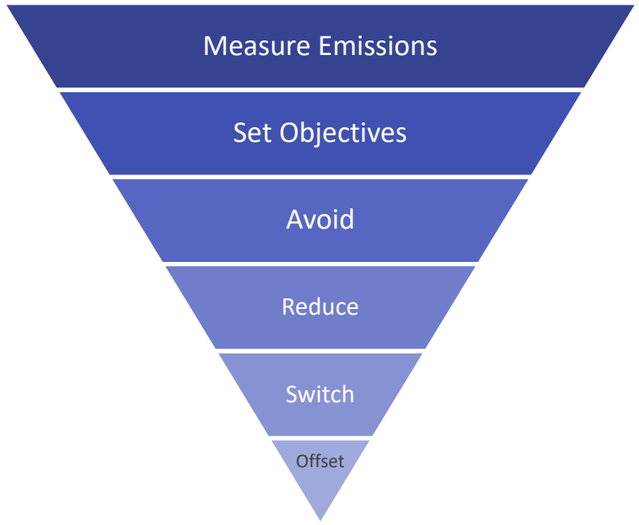

Figure 11: Emissions Reduction Pathway

1. Start by understanding the emissions profile, including energy, water, waste, transport, and refrigerants.
2. Agree on objectives and timeframes for carbon reduction.
3. Identify where emissions can be avoided. This is often the most cost-effective way of reducing emissions.
4. Implement reduction and efficiency programs for energy, water and waste.
5. Consider alternative energy sources, such as solar, and alternatives to transport emissions, such as electric vehicles.
6. Consider purchase of carbon offsets or carbon sequestration for any remaining emissions.

To ensure that carbon emissions are avoided where possible and reduced over time to achieve the carbon negative outcome, the following emission reduction strategies will support SAP's carbon negative goal:

Energy

- Implementing energy efficiency initiatives on all projects.
- All new projects are powered by electricity, moving to a decarbonised economy.
- All new projects are powered by 100% renewable energy through PPA's.

Transport

- Transitioning buses and coaches to zero emission options (electric/hydrogen).
- Transitioning from private vehicles to walking, cycling and Mobility-as-a-Service (MaaS) models.
- Transitioning to zero emission flights for travel to the region.

Water

- Transitioning to alternative water supplies such as rainwater harvesting and recycled water supplies.
- Improving wastewater management systems and implementing a closed loop system.

Waste

- Increasing waste separation rates to reduce waste to landfill.
- Maximising circular economy opportunities within businesses, with a focus on sharing knowledge and resources across the surrounding region and sourcing local produce and materials.

Based on the above initiatives, the below emissions projection has been developed to demonstrate that implementing emission reduction measures has the potential to reduce emissions by over 50% (or approximately 40,000 tCO2-e) by 2060. The largest impact is securing a 100% renewable energy supply for organisations in the SAP.

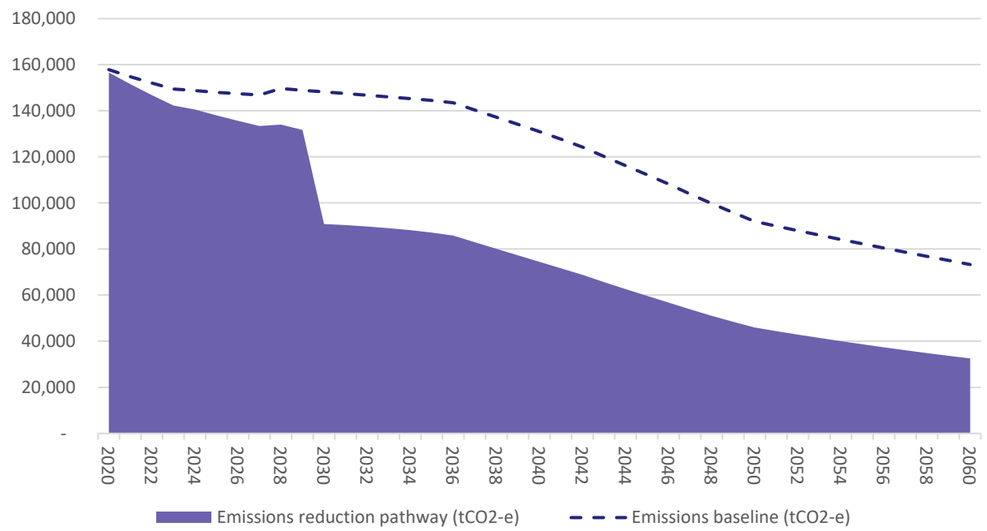

Figure 12: Emissions reduction pathway

This is a large reduction in emissions and demonstrates that by embedding emission reduction measures into the Snowy Mountains SAP Structure Plan, Delivery Plan/s, Development Control Plan/s and Precinct Design Guidelines, the project can make a significant contribution to reducing emissions for the region, NSW and Australia in line with national and International commitments.

However, the remaining emissions will still need to be reduced and offset with carbon offsets to achieve the Snowy Mountains SAP's aim of being a climate positive, carbon negative precinct. This includes investigating additional emission reduction initiatives, increasing the targets set for various emission reduction initiatives already identified, and implementing carbon offsetting and sequestration projects to reduce the remaining emissions to zero.

It is recommended that the following initiatives are incorporated:

- Emissions reduction initiatives are incorporated to reduce the Snowy Mountains SAP's emissions are far as practicable to reduce emissions prior to carbon sequestration and offset programs.
- A strategy and timeframe for achieving carbon neutrality is developed which captures ongoing monitoring requirements, emission reduction initiatives, roles and responsibilities and operating budgets.
- Individual projects to seek carbon neutrality and be certified with Climate Active, leading the way for the whole SAP.
- Monitoring and improvement programs are incorporated into the Snowy Mountains SAP's ISO 14001 Environmental Management System (EMS).

Carbon negative roadmap

Following all of the above being planned for and incorporated, the following diagrams show an example carbon negative roadmap for the Snowy Mountains SAP with an emissions reduction pathway and carbon negative pathway outlined. Note that there projections are based in a point in time during the development of the Master Plan and will change significantly due to changes in government policies and programs. The below is intended to provide a potential pathway for reducing the main emission sources in the SAP.

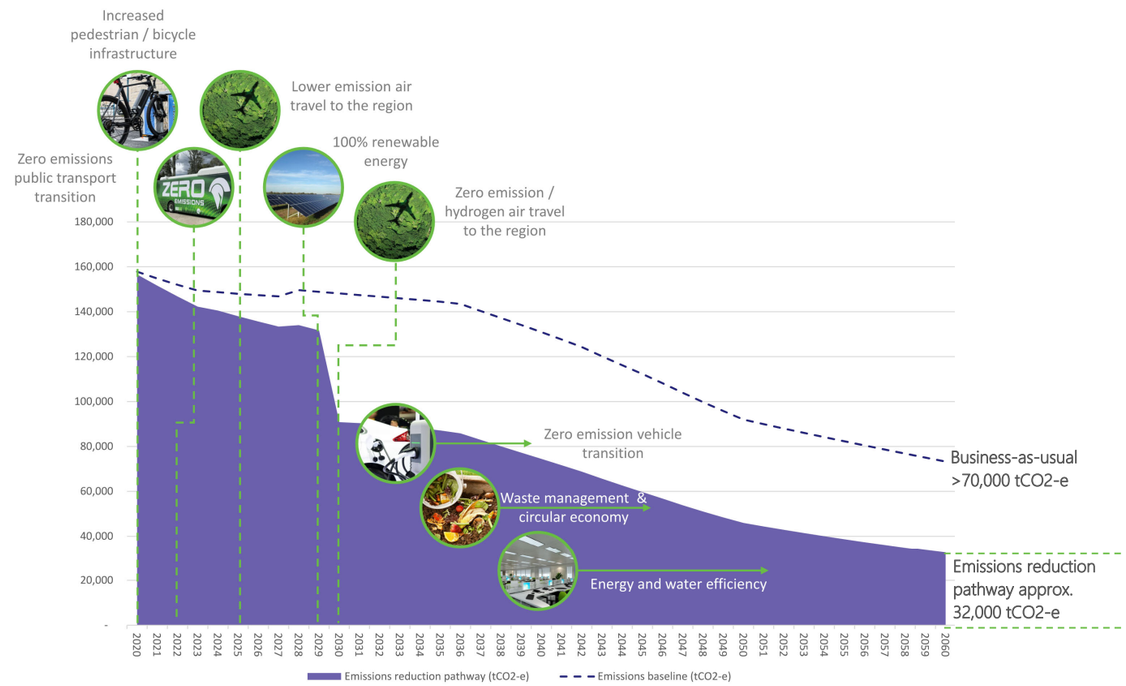

Figure 13: Carbon negative roadmap – No offsets/sequestration

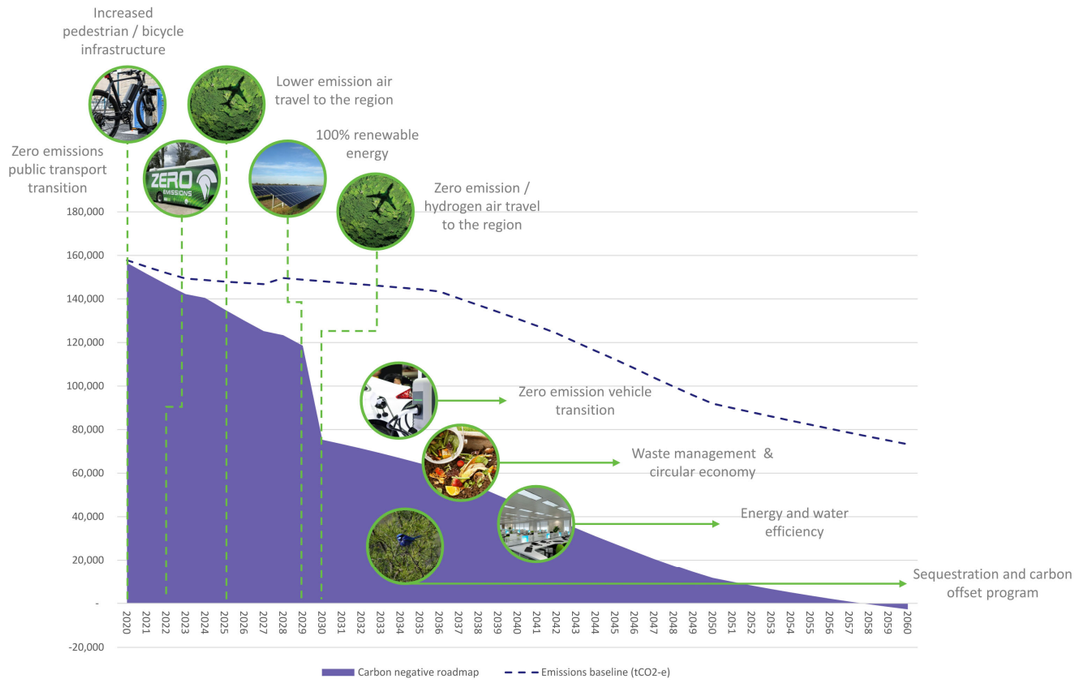

Figure 14: Carbon negative roadmap - Carbon sequestration/offset program

Society

Outcome: Mind, body and soul rejuvenated

Sustainable communities include resilient and healthy societies. The ESD theme of 'Society' includes community health and wellbeing, social connections, heritage and culture, and connection to place.

The International WELL Building Institute (WELL) determines that our health is determined by four key factors: our physical/social environment, our lifestyle/health behaviours, our quality of medical care, and genetics.

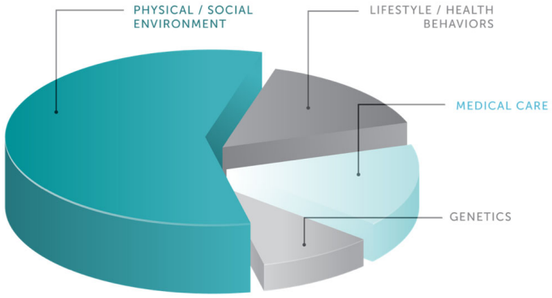

Figure 15: Factors affecting Wellbeing. IWBI

Almost 60% of our health is determined by our physical and social environment, which is largely dictated by buildings and our physical environment. A further 20% is determined by our lifestyle and health behaviours, which can be influenced by the provision of healthy choices in our communities.

It therefore follows that if we design infrastructure and buildings which create healthy environments for communities, and facilitate the use of the assets in a healthy way with education and support for the people who use it, the result will be significantly healthier people.

The tourism industry has also seen the effect of the increase in interest and spending in wellbeing and combines two growing industries – the tourist and wellness industries to provide 'wellness tourism'. The Lonely Planet estimates a 10% annual rise in wellness tourism, with Intrepid Travel recently launching a new travel tour wellness category, focussing on three key categories of mindfulness, movement, and nourishment.

A key driver of the Snowy Mountains SAP is to increase economic growth to the Snowy region through increased visitation, creating 'Australia's Alpine Capital': a destination of choice for sporting and adventure activities, and a year-round destination.

To support this, a number of ESD destination opportunities have been identified for consideration to support growth in ecotourism and therefore visitation to the region as shown in the adjacent diagram.

- Increased physical connection, open space, views and enhancement of the natural environment in the Jindabyne area. A 20-minute town with walking and cycling infrastructure prioritised.
- Community and visitor health and wellbeing are prioritised through inclusion of wellbeing principles in all development. Walkability, fitness, open space and community spaces are integrated throughout the Structure Plan. Many of the proposed new sports facilities are to be designed for shared community access.
- Focus on year-round outdoor activities, sports and wellbeing.
- Tourism opportunities in eco and wellbeing opportunities, including increased camping, multi-day walking routes and mountain biking activities.
- Transitioning to public transport and zero emissions options over time.
- Creation of social infrastructure focussed on equity.
- Recognising and celebrating history and heritage, including the new Snowy Discovery Centre.
- The Structure Plan includes expansion of existing and development of new sports and tourism developments, focussing on the wellbeing of the community, visitors and tourists.
- Snowy Mountains SAP design guidelines are to be developed which will including requirements to design buildings and community spaces for wellness.

Figure 16: Summary of wellness, social and cultural opportunities

Mobility

Outcome: the future of efficient mobility

The Snowy Mountains SAP has a strong focus on transport systems and improving connections both within and to the area, to create a more efficient and effective transport system.

Current transport systems in the Snowy Mountains SAP are heavily reliant on private vehicle ownership for travel to and within the region. Based on visitor data and surveys, over 85% of the visitors to the region access it via private vehicles with an estimated 400,000 vehicles travelling to the Snowy Mountains per year. The main access to the region is via Cooma, with additional access provided via the Snowy Mountains Airport outside of Cooma.

It is recommended that a fully integrated, smart travel network is implemented over time in the Snowy Mountains SAP which includes a zero-emission transport experience which:

- Creates a gateway experience to the Snowy Mountains SAP with mobility connections to the Snowy Mountains Airport providing a sustainable, zero emission transport experience.
- Facilitates travel to and from the Snowy Mountains SAP via a sustainable form of travel (electric vehicles and green hydrogen train/plane/vehicle) which considers the transport needs of adventure tourism and snow sports (e.g. storage of skis/snowboards).
- Provides efficient and effective public and on-demand forms of transport including EV buses, shuttle buses and autonomous vehicles.
- Integrates MaaS for shorter trips including bicycle, e-bike and ride sharing.
- Supports and promotes active and sustainable transport networks including bicycle and pedestrian pathways, e-bike hire and adventure tourist attractions.
- Walking and cycling infrastructure has been incorporated in the Structure Plan to support zero emission transport options and create a 20-minute Jindabyne. This is further supported by lower speed limits around key community areas which improves safety and promotes people getting out of their car and walking or cycling.
- Active transport and recreation options are being expanded including an adventure/mountain bike park with a gondola to support movement around the park and reduce private vehicle dependence.
- Provides improved digital and autonomous systems to provide real time data and support to transport networks in the Snowy Mountains SAP.
- Provides alternatives to private vehicle use and enables a car free experience.

Circular Economy

Outcome: Collaborating to share resources and knowledge

A circular economy model redesigns current linear thinking to a closed loop or circular systems approach, which maximises resource efficiencies, reduces waste and improves natural systems. Creating a circular economy within the region can provide benefits from an environmental, economic and social perspective, with increased efficiencies providing greater return on investment for the local economy and reduced resource consumption decreasing environmental impact.

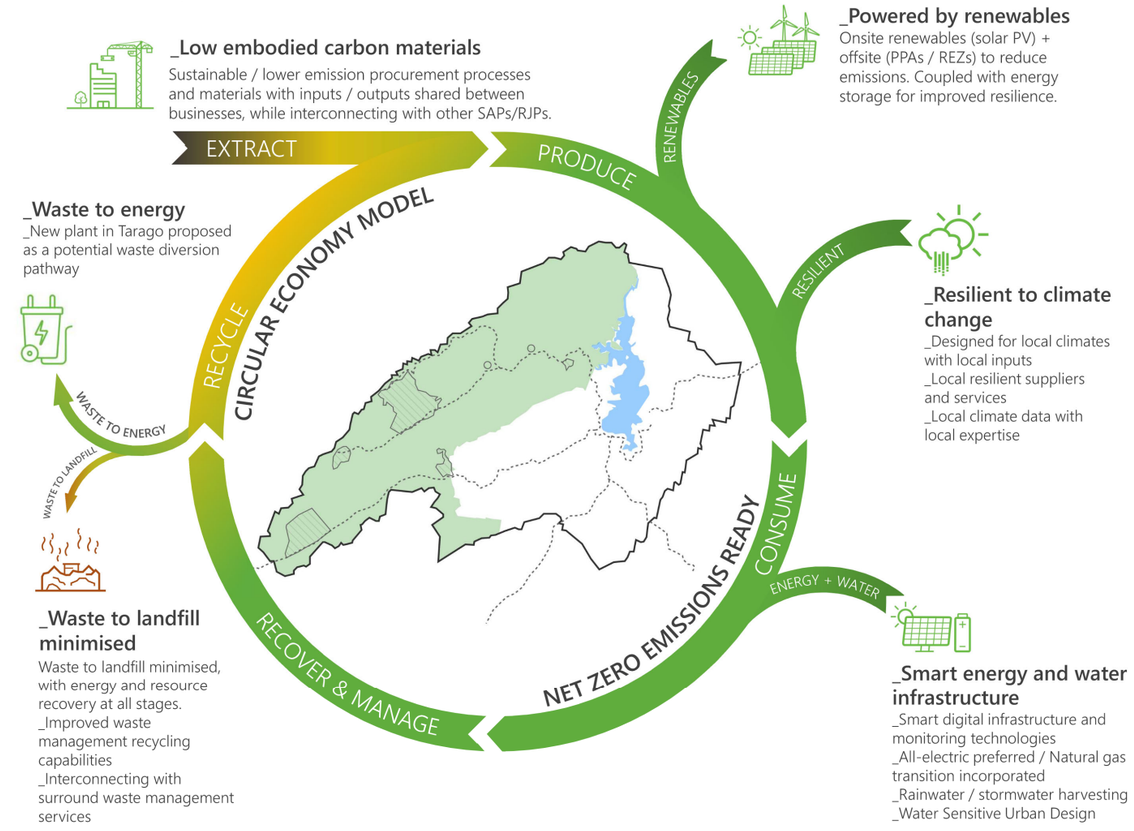

Figure 17: Circular Economy in the Snowy Mountain SAP

There are many opportunities to improve circular economy and waste management processes within the Snowy Mountains SAP and to become a leader in effective waste management in public places. Some of the key opportunities include:

- Support waste management and recycling infrastructure to improve waste separation and diversion.
- Develop circular economy relationships between Snowy Mountains SAP businesses.
- Consider opportunities to link learning and education facilities in the region with existing and new businesses, to allow skilled workers to stay in the region, creating a cycle of learning and development.
- Consider incentivising the use of recovered / recycled materials in construction, and also designing buildings for deconstruction and post-use recovery.
- Explore opportunities to align the Snowy Mountains SAP Structure Plan, future Delivery Plan and Precinct Design Guidelines with circular economy initiatives.

Water

Outcome: Celebrate Snowy's founding natural resource

Water is precious in Australia, even more so after recent prolonged drought events. However, with careful design and use of water, it can be used to support the needs of development.

Water is an especially important resource for the Snowy region. Water is described in the Hill Thalis Regional Context Analysis as 'the foundational element of the region'. It has historical and geological importance, and is a huge economic contributor to the region through the Snowy Hydro project.

The following water supplies will need to be integrated in combination to provide a balanced outcome which reduces environmental impact:

- New water infrastructure and urban planning to incorporate water sensitive urban design, including open space and waterfront areas. Increased green infrastrucutre will help manage stormwater entry to Lake Jindabyne.
- Wastewater treatment systems in the alpine areas to be upgraded to closed loop systems with no pollution to alpine streams.
- Build water capture and reuse infrastructure for all new developments.An integrated water cycle is establised based on water sensitive urban design (WSUD) principles, including better management of stormwater quality and quantity.
- Build infrastructure to capture alternative and sustainable natural water supply sources, including rainwater and recycled water.

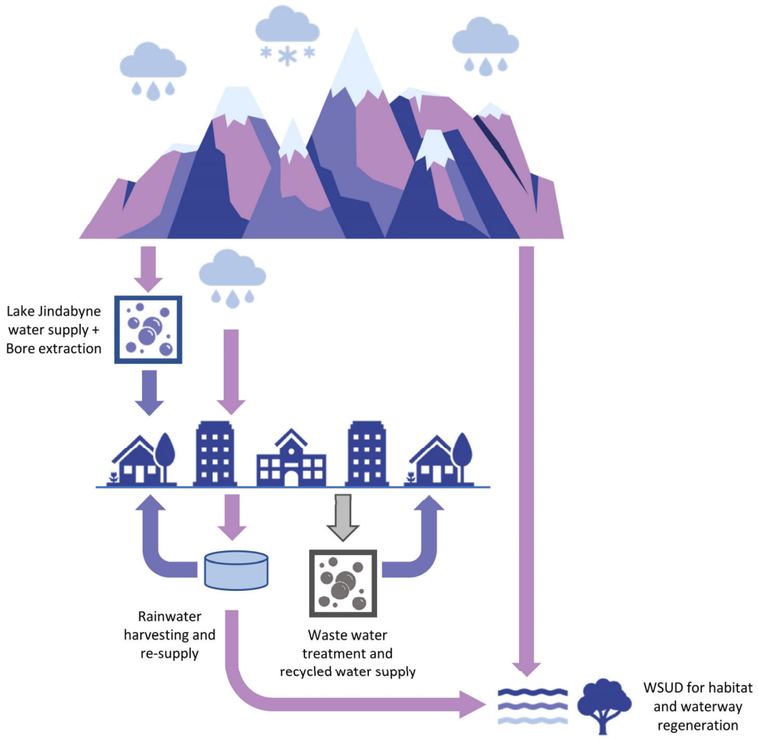

Figure 18: Integrated Water Cycle

Appendix A - ESD Delivery Plan

The following table summarises the ESD aims, performance criteria and provisions to be considered alongside the Snowy Mountains SAP Masterplan, State Environmental Planning Policy (Precincts—Regional) 2021 (Precincts—Regional SEPP), Snowy River Local Environmental Plan 2013 (Snowy River LEP), the Kosciuszko National Park Plan of Management and in the development of the SAP delivery plan.

ESD Themes	Recommended Aims and Performance Criteria – Masterplan	Recommended Objectives and Controls	
		Alpine Precinct	**Jindabyne Growth Precinct DCP and/or Jindabyne Catalyst Delivery Plan**
Climate resilience	The precinct is adaptable and resilient to climate change impacts. Current climate change projections are used to inform the development growth scenario's and ensure sustainable development can occur to align with the UN Sustainable Development Goals. Prioritise developments that focus on alternatives to snow-based tourism.	• Development considers the climate risks of the Snowy Climate Change Plan and includes controls to mitigate these risks. • Provide development controls that encourages year round tourism. • Consider infrastructure upgrades and funding opportunities to ensure the provision of climate resilient infrastructure. Ensure economic resilience and the role of business continuity planning with regards to considering climate resilience.	
Emissions	The precinct's greenhouse gas (GHG) emissions are monitored and reduced in line with the Climate Active Precinct Standard. In the Alpine Precinct, this is achieved through the EMS. In the Jindabyne precincts, new projects must measure and report on emissions through an online portal.	• Individual projects are carbon neutral certified in line with the Climate Active Precinct Standard (or equivalent), allowing the whole SAP a pathway to carbon negative operations.	
		• GHG emissions are monitored and reported annually through the Alpine precinct EMS.	• An emissions reduction strategy is developed and initiatives are integrated into the Jindabyne Catalyst Delivery Plan. • GHG emissions data is reported annually for all new projects in the Jindabyne Catalyst Precinct.
Energy	The precinct is powered by renewable energy, taking advantage of the natural resources of the region and proximity to the Snowy Hydro development.	• New projects to enter into renewable Power Purchase Agreements (PPA) with to supply 100% renewable energy. • Integrate energy efficiency and productivity into development design guidelines, with both embodied energy and lifecycle emissions considered.	
		• Energy consumption is monitored and reported annually through the Alpine precinct EMS.	• Energy consumption is reported annually.
Environment	The precinct allows for growth and economic activity to thrive whilst minimising environmental impact, through initiatives that 'touch the ground lightly'. Development within KNP is controlled by the Snowy Carrying Capacity framework, which is integrated into the precinct's ISO14001 Environmental Management System (EMS).	• The precinct's environmental impacts are effectively managed and reduced in line with the Alpine Precinct ISO14001 Environmental Management System (EMS).	• Implement urban design, infrastructure and building design guidelines to maximise environmental conservation. • Environmental impacts are reviewed annually, with performance improvement mechanisms identified. These impacts will be publicly reported annually.
Society	Development in the precinct expands on the regions focus on the outdoors and physical activity, to ensure the health and wellbeing of the community. The unique culture and history of the region is celebrated.	• Implement design guidelines for buildings and community spaces that focus on wellbeing. • Create social infrastructure focussed on equity.	
			• Recognise and celebrate history and heritage in developments, including the Snowy Discovery Centre.
Mobility	A fully integrated transport model is developed which provides a seamless transport service across the precinct. Develop zero emission transport and infrastructure, prioritising public transport options within the Snowy Mountains SAP.	• Provide park and ride facilities to travel to and from ski resorts and tourist attractions. • Implement supporting infrastructure for zero emission vehicles (electric vehicle charging) and Mobility as a Service (MaaS) provisions.	
			• Create southern connector road to reduce congestion and vehicle numbers in main town centre, facilitating a pedestrian and bike friendly environment.

ESD Themes	Recommended Aims and Performance Criteria – Masterplan	Recommended Objectives and Controls	
		Alpine Precinct	**Jindabyne Growth Precinct DCP and/or Jindabyne Catalyst Delivery Plan**
Circular economy	The precinct supports the expansion of resource recovery and recycling industries and embeds circular economy principles into planning and operations.	• Identify resource flows within the alpine resorts to encourage circular economy opportunities.	• Waste management is effectively managed throughout the precinct in accordance with the SMRC Waste Management Strategy. • Council to report total landfill waste and diversion rates for waste generated in the SAP. Landfill diversion are reviewed annually, with performance improvement mechanisms identified. These results will be publicly reported annually.
Water	The precinct celebrates the abundant natural water resources of the area, with all development focussed on water quality and stormwater management, through capture, reuse and water sensitive urban design (WSUD).	• New water infrastructure and urban planning to incorporate water sensitive urban design. • Build water capture and reuse infrastructure for all new developments.	
		• Wastewater treatment systems in the alpine areas to be upgraded to closed loop systems with no pollution to alpine streams.	• Ensure water quality of the lake is maintained and improved where possible.
Leadership	The precinct's environmental impacts are effectively managed and reduced and an appropriate rating/certification tool is used to demonstrate sustainability leadership.	• Individual projects show demonstration of sustainability leadership through certification against the appropriate Green Star rating (or similar).	
		• All development is monitored against its ability to contribute to the Alpine precinct EMS outcomes. Reporting and implementation of these frameworks is applied at mandatory, voluntary and opt-in scales depending on scale of development and impact. • EMS controls are reported annually and report is made available to the public.	