



**SUBURBAN
RAIL LOOP
EAST**

SRL East Draft Structure Plan | Monash

Climate Response Plan

Suburban Rail Loop

PREPARED FOR SUBURBAN RAIL LOOP AUTHORITY

SRL EAST DRAFT STRUCTURE PLAN – CLIMATE RESPONSE PLAN – MONASH

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This document is based on the information available, and the assumptions made, as at the date of the document. For further information, please refer to the assumptions, limitations and uncertainties set out in the methodology section of this document.

This document should be read in full and no excerpts are to be taken as representative of the findings.

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Glossary and abbreviations

Acronym	Abbreviation
AEP	Annual Exceedance Probability
ARENA	Australian Renewable Energy Agency
BESS	Built Environment Sustainability Scorecard
C&D	Construction and Demolition (waste)
CASBE	Council Alliance for a Sustainable Built Environment
CO ₂ e	Carbon Dioxide Equivalent
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CRP	Climate Response Plan
ESD	Environmentally Sustainable Design
GBCA	Green Building Council of Australia
HVAC	Heating, Ventilation, and Air Conditioning
IWM	Integrated Water Management
NABERS	National Australian Built Environment Rating System
NatHERS	Nationwide House Energy Rating Scheme
NCC	National Construction Code
SDA	Sustainable Design Assessment
SDAPP	Sustainable Design Assessment in the Planning Process
SDGs	(United Nations) Sustainable Development Goals

Executive summary

As part of the Suburban Rail Loop (SRL) East project, Draft Structure Plans (Structure Plans) are being prepared for the neighbourhoods surrounding the new underground stations at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill.

The Structure Plans will set a vision and framework to guide growth and change in each neighbourhood, while protecting and preserving the character and features people love about them now.

This SRL East Draft Structure Plan - Climate Response Plan – Monash (Climate Response Plan) will inform the development of the Draft Monash Structure Plan (Monash Structure Plan).

CLIMATE RESPONSE PLAN

SRL will generate growth and change that presents challenges and opportunities for the surrounding community and neighbourhood. The main climate related changes, challenges and opportunities are listed below.

More medium and high-density development	Greater connectivity	Connected planning	Zero emission mobility choices
Population growth	Liveability pressure in a changing climate	Greater energy and water demand	More pressure on open space, vegetation and natural resources

The Climate Response Plan will support the Monash Structure Plan Area to be more climate responsive to address to these changes, challenges and opportunities.

This Climate Response Plan responds to the Monash Vision Theme 5 – Empowering Sustainability.

Theme 5 aims to guide how development and growth in the Structure Plan Area surrounding the SRL station at Monash adapts to and mitigates the effects of climate change and contributes to environmental sustainability.

Seven sustainability focus areas were developed for the Monash Climate Response Plan. The focus areas:

- Support a triple-bottom line approach to achieving climate and sustainability outcomes aligned to the Monash Vision and the SRL vision of productive, connected and liveable communities
- Support and align with relevant guidelines and SRL policies (including the SRLA Sustainability Policy, and SRL Urban Design Framework) to ensure a consistent, best practice approach to delivering SRL.

KEY FINDINGS

The analysis of the sustainability focus areas for the Monash Structure Plan Area highlighted that:

- The Monash Structure Plan Area is currently experiencing sustainability challenges, including:
 - » Some flooding in the Monash Structure Plan Area during a 1 % Annual Exceedance Probability (AEP) + climate change event, with higher flood risk areas around main drains. However, there is a retarding basin on the Monash University campus along the Monash University Drain.
 - » High urban heat vulnerability due to low tree canopy coverage in the commercial area between Clayton Road and Gardiner Road and between Ferntree Gully Road and Hilltop Avenue.
 - » There are very few public open spaces due to Monash University's Clayton campus and the large industrial area to the north. Herriotts Boulevard Reserve has biodiversity significance.
 - » Greenhouse gas emissions likely driven by non-renewable energy sources in commercial and industrial area.

- Current Victorian and local government policy supports addressing current and emerging climate change and sustainability challenges in the Monash Structure Plan Area. However, the implementation of these policies in the municipal planning schemes is limited, and there is generally a lack of planning support to deliver sustainability policy outcomes.
- Under a Future Business as Usual State, where SRL East is delivered but there is no change to the policy and planning environment of today, it is expected that current sustainability challenges will remain or worsen due to the projected growth and densification of the Monash Structure Plan Area, such as accelerated higher density development around the SRL station. This will create a gap between what is expected and what the aspirations are for the Monash Structure Plan Area.
- Under a Future Accelerated State, where changes to address sustainability challenges are implemented through policy and planning approaches to deliver accelerated sustainability outcomes, a number of sustainability opportunities have been identified that support the Structure Plan Area achieving regional sustainability policy objectives, and the Monash Vision.

RECOMMENDATIONS AND OPPORTUNITIES

This Climate Response Plan makes recommendations for each focus area to consider when developing the Monash Structure Plan.

The recommendations are sorted into three categories:



Structure Plan responses to guide and promote sustainability and climate considerations in the future planned land use, built form, and public spaces to support changing community needs.



Planning Scheme responses which recommend new planning controls to improve the climate responsiveness and sustainability of development in the Structure Plan Area.



Other opportunities to promote climate change resilience and sustainability, including partnerships and initiatives with government, industry and other organisations.

The recommendations address the sustainability challenges of the Monash Structure Plan Area, and aim to help achieve the SRL sustainability vision, and the sustainability outcomes of the Monash Vision.

The recommendations aim to close the gap between Future Business As Usual State, and what is possible under a Future Accelerated State.

The goal is for the neighbourhood around the SRL station to become more liveable, connected and productive as its population grows and the density of development increases, with greater climate change resilience and improved sustainability.

RECOMMENDATIONS AND OPPORTUNITIES FOR THE MONASH STRUCTURE PLAN

Focus area	Recommendations / Opportunities		Ref#
 Realising net zero	Net zero buildings	Structure Plan response	1A
	Private development sustainability certification	Planning Scheme response	1B
	Partnerships for a decarbonised energy supply	Other opportunities	1C
 Integrated water management	Place-based integrated water management	Structure Plan response	2A
	Alternative water supply	Planning Scheme response	2B
	Partnerships to support integrated water management	Other opportunities	2C
 Circular economy and sustainable procurement	Supporting a circular economy	Structure Plan response	3A
	Embodied carbon reduction in new developments	Planning Scheme response	3B
	Construction and operational waste management targets	Planning Scheme response	3C
	Partnerships to support a circular economy	Other opportunities	3D
 Place-based measures to promote zero emissions transport	Recommended to deliver zero-emissions transport measures through the SRL East Structure Plan –Transport Technical Report - Monash	N/A	(4)
 Climate change adaptation	Climate change adaptation	Structure Plan response	5A
	Climate change risk management standards	Planning Scheme response	5B
 Environmental enhancement and protection	Urban greening strategy	Structure Plan response	6A
	Green infrastructure for new developments	Planning Scheme response	6B
	Partnerships to support environmental enhancement and protection	Other opportunities	6C
 Urban heat island strategy	Urban heat island mitigation	Structure Plan response	7A
	Private development site urban heat island performance criteria	Planning Scheme response	7B

1. Introduction

Suburban Rail Loop (SRL) is a transformational project that will help shape Melbourne's growth in the decades ahead. It will better connect Victorians to jobs, retail, education, health services and each other – and help Melbourne evolve into a 'city of centres'.

SRL will deliver a 90-kilometre rail line linking every major train service from the Frankston Line to the Werribee Line via Melbourne Airport.

SRL East from Cheltenham to Box Hill will connect major employment, health, education and retail destinations in Melbourne's east and south east. Twin 26-kilometre tunnels will link priority growth suburbs in the municipalities of Bayside, Kingston, Monash and Whitehorse.

SRL East Structure Plan Areas will surround the six new underground stations at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill.

1.1 Purpose of this report

This Climate Response Plan will inform the development of the Draft Monash Structure Plan (Monash Structure Plan) to guide land use planning and development in the Structure Plan Area.

The Climate Response Plan describes the existing climate change and sustainability conditions in Monash Structure Plan Area.

Challenges and opportunities relating to climate change and sustainability that impact planning for the development of the Monash Structure Plan Area are identified.

Recommendations to consider when developing the Monash Structure Plan are made. Recommendations include Structure Plan responses, Planning Scheme Responses and other opportunities (such as partnerships).

The recommendations aim to address the sustainability challenges of the Structure Plan Area, support Victorian and local government policies, and help achieve the SRL sustainability vision and the sustainability outcomes of the Monash Vision.

The Climate Response Plan will support the Monash Structure Plan Area to be more climate responsive by:

- Outlining recommendations to reduce greenhouse gas emissions, and setting targets and measures to achieve net zero emissions across the Monash Structure Plan Area
- Identifying resilience strategies for the Monash Structure Plan Area to enhance its ability to withstand climate-related challenges and prepare communities and organisations to adapt to the impacts of a changing climate by identifying potential vulnerabilities
- Ensuring a comprehensive approach to targeted sustainability outcomes across seven focus areas (Refer to section 2.1)
- Identifying stakeholders and opportunities for partnerships to support a coordinated effort to address climate change across the Monash Structure Plan Area.

1.2 Project context

Construction of the SRL East underground stations is underway at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill. This provides an opportunity to enhance the surrounding neighbourhoods.

SRL East will support thriving and sustainable neighbourhoods and communities that offer diverse and affordable housing options, with easy access to jobs, transport networks, open space, and community facilities and services.

Visions have been developed in consultation with the community and stakeholders for the SRL East Structure Plan Areas and surrounds. The Visions set out the long-term aspirations for the areas so they are ready to meet the needs of our growing population.

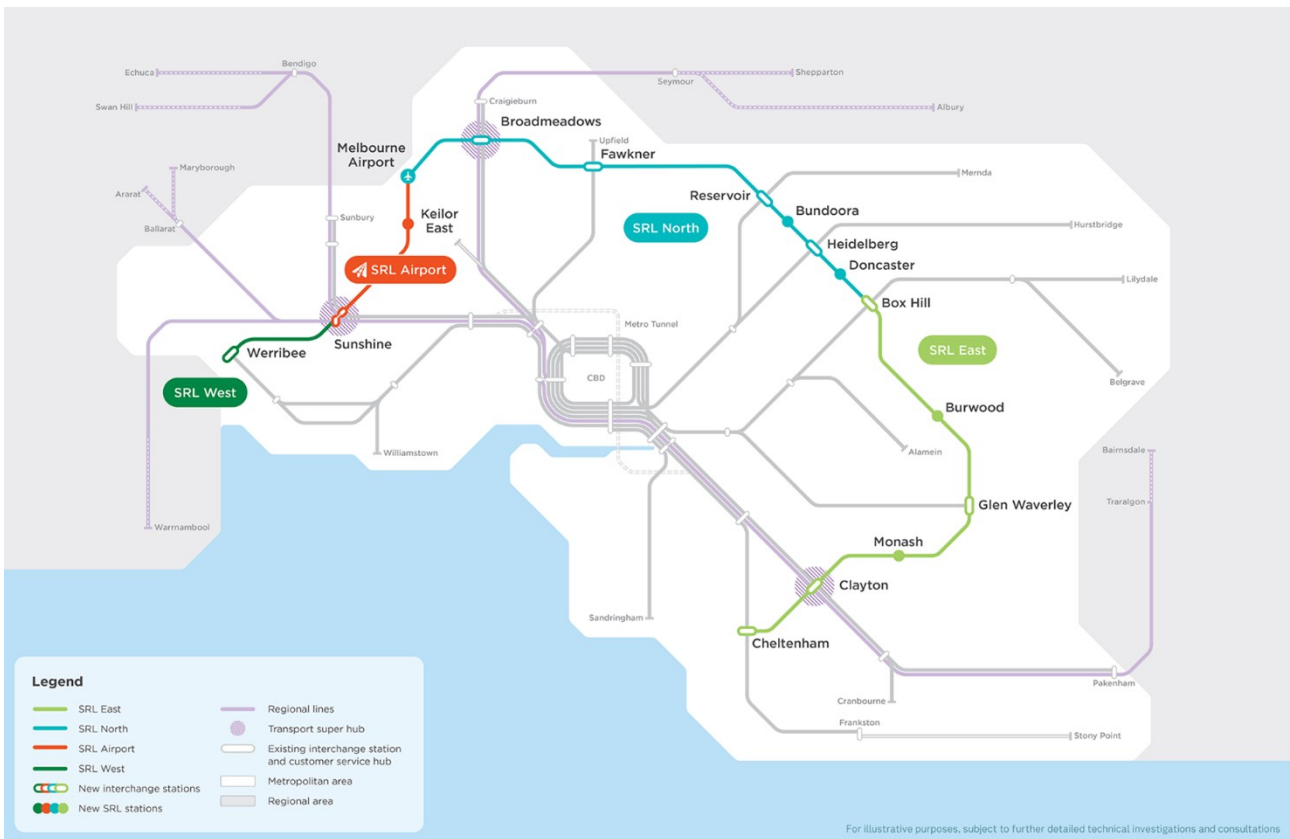


FIGURE 1.1 SRL EAST IN MELBOURNE'S RAIL NETWORK

1.3 Structure planning for SRL East

Draft Structure Plans (Structure Plans) have been prepared for defined areas surrounding the new SRL East stations to help deliver the Vision developed for each SRL East neighbourhood.

The Structure Plans cover defined SRL East Structure Plan Areas that can support the most growth and change. These areas cover a walkable catchment that extends from the SRL station entrances. Additional places are included within each defined area as required to make planning guidance more robust and effective, and to align with each community's aspirations and current and future needs.

A Structure Plan is a blueprint to guide how an area develops and changes over a period of time. Structure Plans describe how future growth within the area will be managed in an appropriate and sustainable way to achieve social, economic and environmental objectives. The plans cover a wide range of matters, such as transport connections and car parking, housing and commercial development, community infrastructure, urban design, open space, water and energy management, climate resilience and sustainability.

By tailoring planning decisions to reflect the needs of a defined area, Structure Plans give effect to the policies and objectives set for these areas and cater for changing community needs. They also provide certainty for residents, businesses and developers by identifying the preferred locations and timing of future land uses, development and infrastructure provision.

Structure Plans take a flexible and responsive approach that enables places to evolve over time.

Planning scheme amendments will be required to implement the Structure Plans into the planning schemes of the cities of Bayside, Kingston, Monash and Whitehorse.

1.4 Structure of this report

Section 1 provides the background and context of this Climate Response Plan.

Section 2 explains the methodology for developing the Climate Response Plan.

Section 3 defines the Monash Structure Plan Area.

Section 4 identifies existing and future climate and sustainability conditions, challenges and opportunities.

Section 5 sets out recommendations to consider for the Structure Plan and other opportunities.

2. Methodology

The methodology for developing this Climate Response Plan involved:

- A Study Area was identified, which for this Climate Response Plan was the same area as the Structure Plan Area (see Section 3).
- Victorian Government and local government policies, strategies and planning schemes and settings relevant to climate change and sustainability in the Structure Plan Area were reviewed. These are summarised in Appendix A.
- Seven sustainability focus areas were developed to guide development of the Climate Response Plan. These sustainability focus areas respond to the United Nations Sustainable Development Goals, as well as the SRLA Vision developed for Monash.
- More information on the sustainability focus areas and the sustainability vision is provided below, in Section 2.1 and Section 2.2).
- Existing climate change and sustainability conditions that identify challenges to deliver the Vision in the Structure Plan Area according to each sustainability focus area were identified. Future challenges under a 'Business as Usual State' and future opportunities under a 'Future Accelerated State' (see Section 4) were also identified.
- Recommendations were developed for each sustainability focus area to support the achievement of the Vision, to address sustainability challenges and close the gap between what is expected under a Future Business as Usual State and what is possible under a Future Accelerated State (see Section 5).

2.1 Sustainability focus areas

Seven sustainability focus areas were developed to guide the development of the Climate Response Plan.

The focus areas aim to support targeted, practical and impactful recommendations to:

































- Support a triple-bottom line approach to achieving climate and sustainability outcomes aligned to the Vision and the SRL vision of productive, connected and liveable communities
- Support and align with relevant guidelines and SRL policies (including the SRLA Sustainability Policy, and SRL Urban Design Framework) to ensure a consistent, best-practice approach to delivering SRL.

In line with Clause 11.02-2S (Structure planning) of the Victorian Planning Policy (VPP) framework,¹ this Climate Response Plan also embeds consideration of the United Nations Sustainable Development Goals (SDGs) into the focus areas and recommendations.

The sustainability focus areas and strategies, and how these align with the United Nations SDGs, are listed in Table 2.1.

¹ A strategy of Clause 11.02-2S of the VPPs is to 'Ensure the ongoing provision of land and supporting infrastructure to support sustainable urban development'.

TABLE 2.1 FOCUS AREAS FOR CLIMATE RESPONSE PLAN AND ALIGNMENT TO THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

Focus area	Focus area strategy	Alignment to SDGs
 Realising net zero	Enable reductions in energy consumption and an accelerated transition to net zero	   
 Integrated water management	Embed sustainable water management practices in Structure Plan Area planning and design	   
 Circular economy and sustainable procurement	Foster responsible use of resources and supports the transition to a circular economy	  
 Place-based measures to promote zero emissions transport	Provide active and sustainable transport options	   
 Climate change adaptation	Mitigate climate risks and hazards to create climate resilient and adaptive places	   
 Environmental enhancement and protection	Protect natural habitats and improve biodiversity in green spaces and waterways	  
 Urban heat island strategy	Mitigate climate risks and hazards to create climate resilient and adaptive places	  

2.2 Sustainability vision

The neighbourhoods around the new SRL East stations will be planned to ensure they have services and amenities to cater for and support the people who will live, work, study and visit them.

The SRL vision is to ‘help ensure a more liveable Victoria for present and future generations – environmentally, socially and economically’² and deliver neighbourhoods that are enduring, sustainable, green and resilient to climate change.³

To support the SRL vision, a Vision for each SRL East neighbourhood was developed in consultation with the community, local governments and other stakeholders.

The Vision for Monash is:

An international destination for scientific knowledge, research and discovery – generating new jobs and playing a critical role in Melbourne’s future economy.

This Climate Response Plan directly supports the Monash Vision Theme 5 – Empowering Sustainability.

Table 2.2 outlines the Vision for sustainability and links this to the sustainability focus areas.

² SRL Sustainability Policy (Suburban Rail Loop Authority)

³ SRL Urban Design Framework (Suburban Rail Loop Authority)

TABLE 2.2 MONASH VISION AND LINK TO SUSTAINABILITY FOCUS AREAS

Vision	Link to sustainability focus area
 <p>Enabling reductions in energy consumption and an accelerated transition to net zero</p>	 <p>Realising net zero</p>
 <p>Fostering responsible use of resources and supporting the transition to a circular economy</p>	 <p>Circular economy and sustainable procurement</p>
 <p>Mitigating climate risks and hazards to create climate resilient and adaptive places</p>	 <p>Climate change adaptation</p>
 <p>Greening urban areas to address heat issues and improve amenity</p>	 <p>Urban heat island strategy</p>
 <p>Protecting natural habitats and improving biodiversity in green spaces and waterways</p>	 <p>Environmental enhancement and protection</p>
 <p>Embedding sustainable water management practices in precinct planning and design</p>	 <p>Integrated water management</p>
 <p>Providing active and sustainable transport options to support healthy lifestyles (from Theme 3 – Better Connections)</p>	 <p>Place-based measures to promote zero emissions transport</p>

2.3 Assumptions and limitations

Recommendations in this Climate Response Plan rely on publicly available, secondary information.

The policy and planning scheme analysis was based on publicly available policies, strategies, planning schemes and other documentation published on Victorian and local government websites.

A detailed, bespoke evaluation of the baseline sustainability conditions in the Structure Plan Area (such as a climate risk assessment) was not undertaken.

No modelling of the recommendations was undertaken to determine the quantified impact on land use, building typologies and population in the Structure Plan Area (such as carbon modelling to determine specific greenhouse gas emissions reductions from recommendations). This was excluded on the basis that high-quality modelling requires a detailed, granular understanding of future precinct development to help inform decision-making, and this level of detail is not yet available at this early stage of precinct planning.

Information is therefore assumed to be accurate at the time this Climate Response Plan was developed, based on best available judgement.

Future detailed planning will refine and identify how Theme 5 – Empowering Sustainability can be delivered in the Monash Structure Plan Area, and support the Victorian Government’s objective for Melbourne to remain a global city of opportunity and liveability.

2.4 Interactions with other technical reports

Other documents developed to inform the Monash Structure Plan also have a sustainability focus.

This Climate Response Plan should be read alongside those documents:

- **SRL East Structure Plan - Transport Technical Report - Monash** – to support the Climate Response Plan place-based measures for zero emissions transport outcomes and recommendations.
- **SRL East Structure Plan - Urban Design Report - Monash** – to support the importance of open space quality, function and connectivity, and support the Climate Response Plan environmental enhancement and protection, and urban heat island strategy and recommendations.
- **SRL East Structure Plan - Open Space Technical Report** – to reinforce the importance of open space quality, function and connectivity, and support the Climate Response Plan environmental enhancement and protection, and urban heat island strategy and recommendations.
- **SRL East Structure Plan - Ecology and Arboriculture Technical Report - Monash** – makes recommendations to improve and enhance ecology and arboricultural values, and support the Climate Response Plan environmental enhancement and protection and urban heat island strategy outcomes and recommendations.
- **SRL East Structure Plan - Utilities Servicing Technical Report** – to support the Climate Response Plan delivery of realising net zero and integrated water management outcomes and recommendations.
- **SRL East Structure Plan - Flooding Technical Report** – to support the Climate Response Plan delivery of integrated water management outcomes and recommendations.
- **SRL East Structure Plan - Integrated Water Management Strategy** – to support the Climate Response Plan delivery of integrated water management outcomes and recommendations.

3. Structure Plan Area

This section defines the Structure Plan Area for the Monash SRL East neighbourhood.

The Monash Structure Plan Area surrounds the SRL station at Monash in the City of Monash.

It is generally bordered by Wellington Road to the south, Beddoe Avenue and Boundary Road to the west, land north of Ferntree Gully Road to the north and an existing drainage channel, which forms a natural barrier to properties to the east.

Monash University's Clayton campus is located in the Monash Structure Plan Area.

The Structure Plan Area for Monash is shown in Figure 3.1.

3.1 Study Area

A Study Area was established for the development of this Climate Response Plan.

The Study Area was based on the Structure Plan Area for Monash.

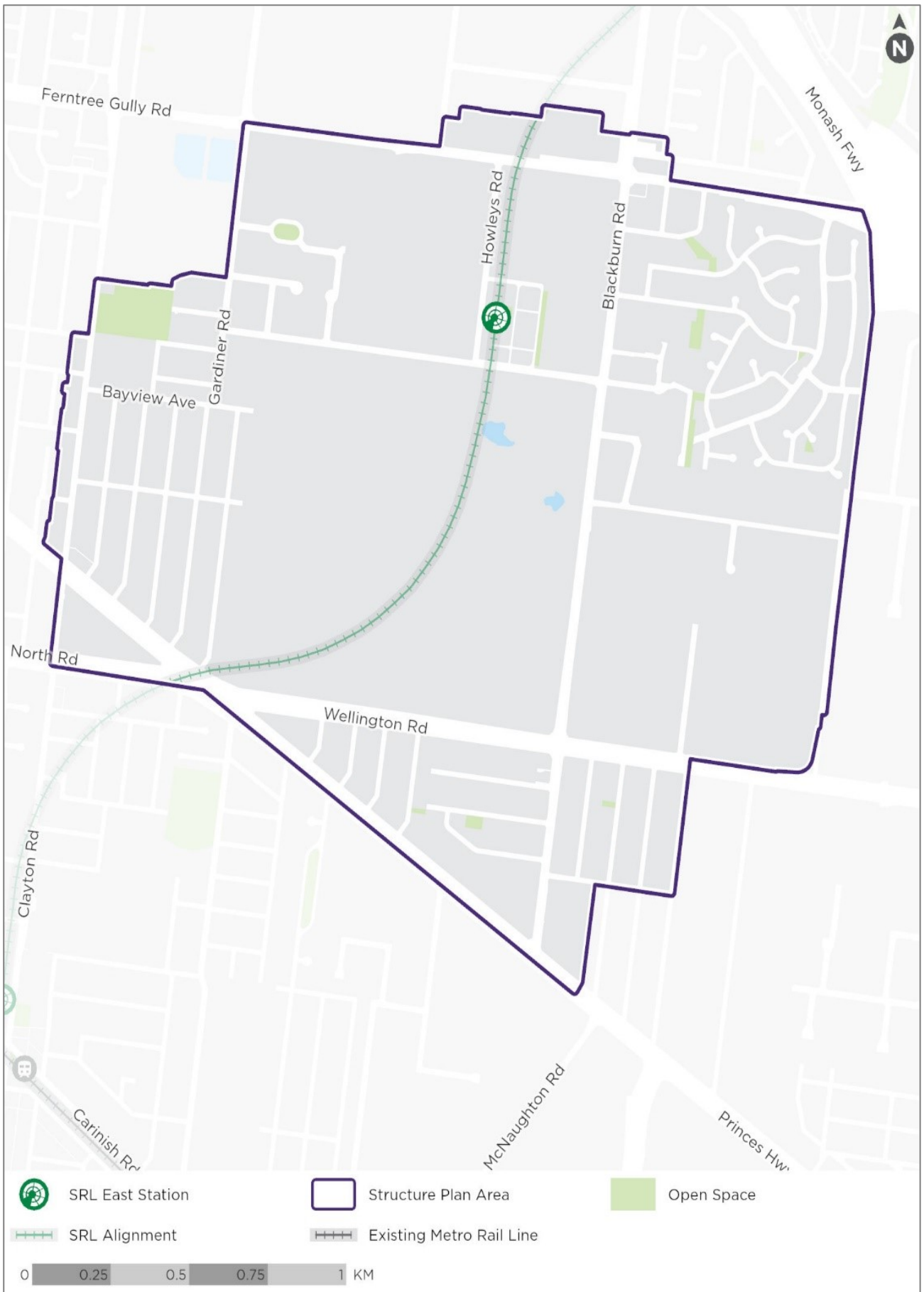


FIGURE 3.1 MONASH STRUCTURE PLAN AREA

4. Existing and future conditions

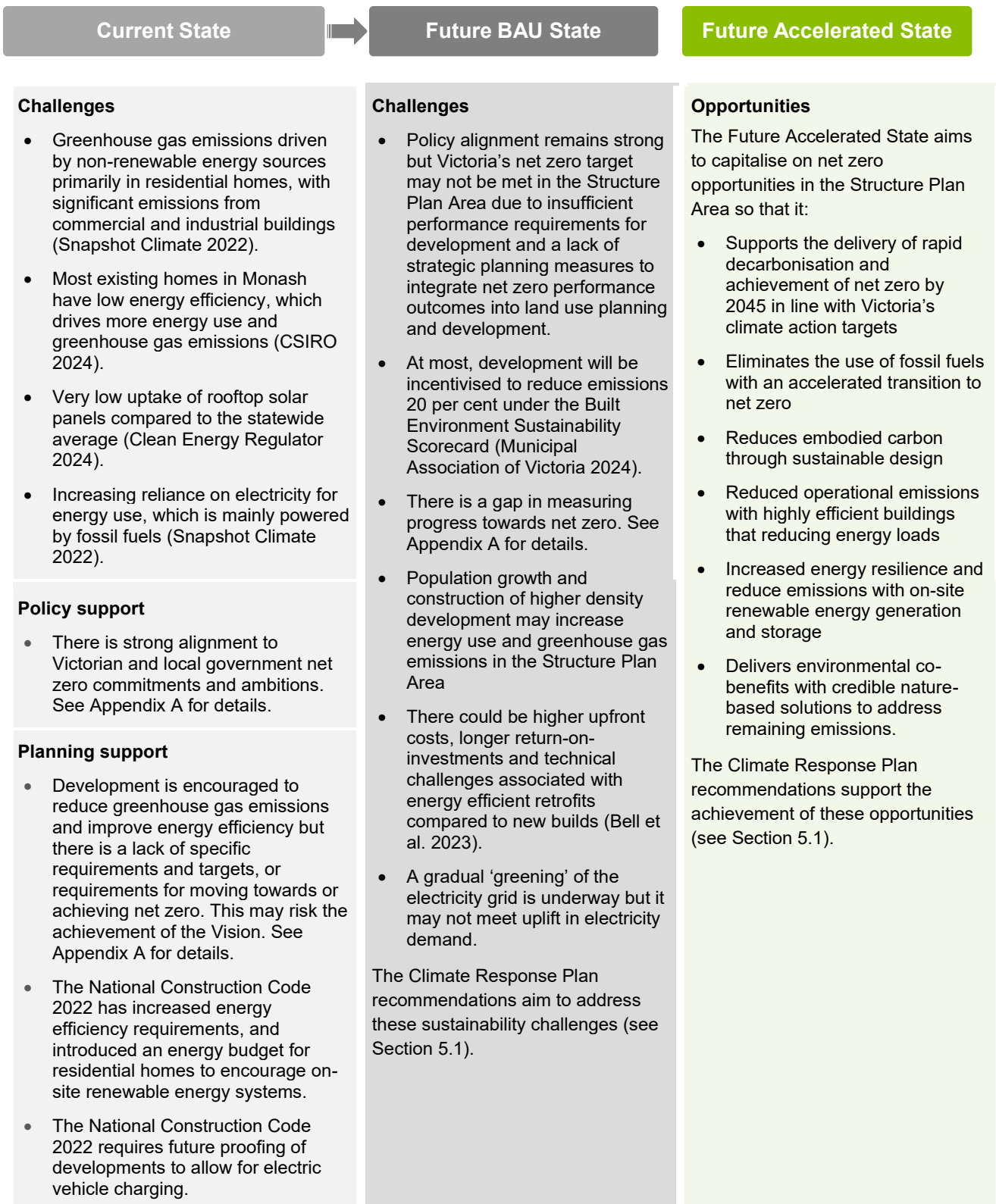
4.1 Current and future states

This section sets out existing sustainability challenges and opportunities (Current State) in the Structure Plan Area against each sustainability focus area.

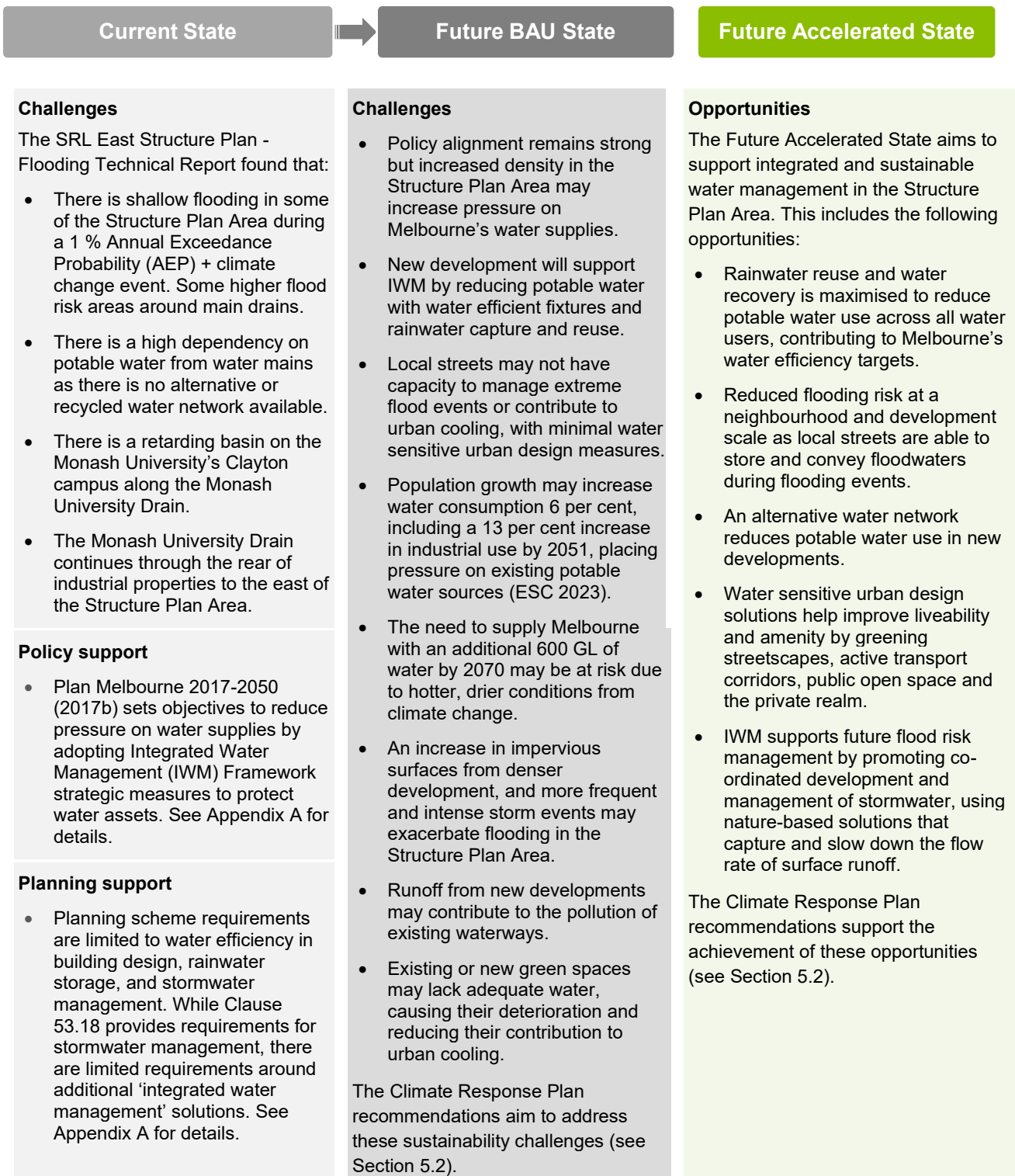
Future conditions based on a 'Business as Usual' state, compared to a 'Future accelerated' state are projected.

Current State	Outlines the current challenges in the Structure Plan Area relating to each sustainability focus area and identifies how the current policy and planning environment impacts the achievement of sustainability outcomes.
Future Business as Usual (BAU) State	SRL East is delivered and generates increased density and population in the Monash Structure Plan Area, but there is no change to the policy and planning environment of today. The Climate Response Plan aims to address the sustainability challenges expected to be experienced in the Monash Structure Plan Area under a BAU State.
Future Accelerated State	SRL East is delivered and generates increased density and population in the Monash Structure Plan Area, with changes to address sustainability challenges implemented with updated policy and a planning scheme to deliver accelerated sustainability outcomes. The Climate Response Plan aims to support the delivery of an Accelerated State for Structure Plan Area, where changes are made to the Structure Plan Area delivery framework to realise identified opportunities (that is, Structure Plan responses, Planning Scheme responses and other opportunities).

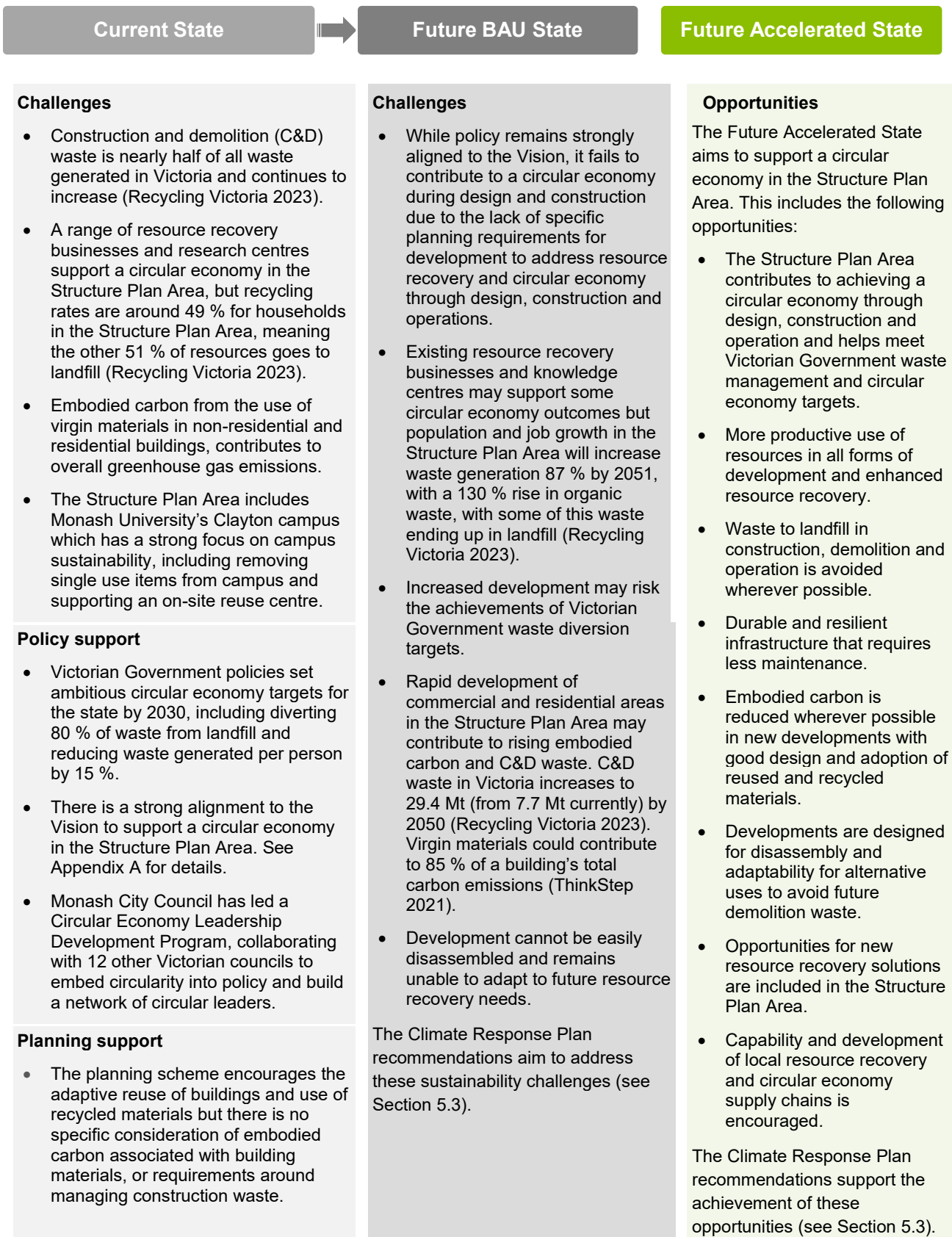
4.1.1 REALISING NET ZERO



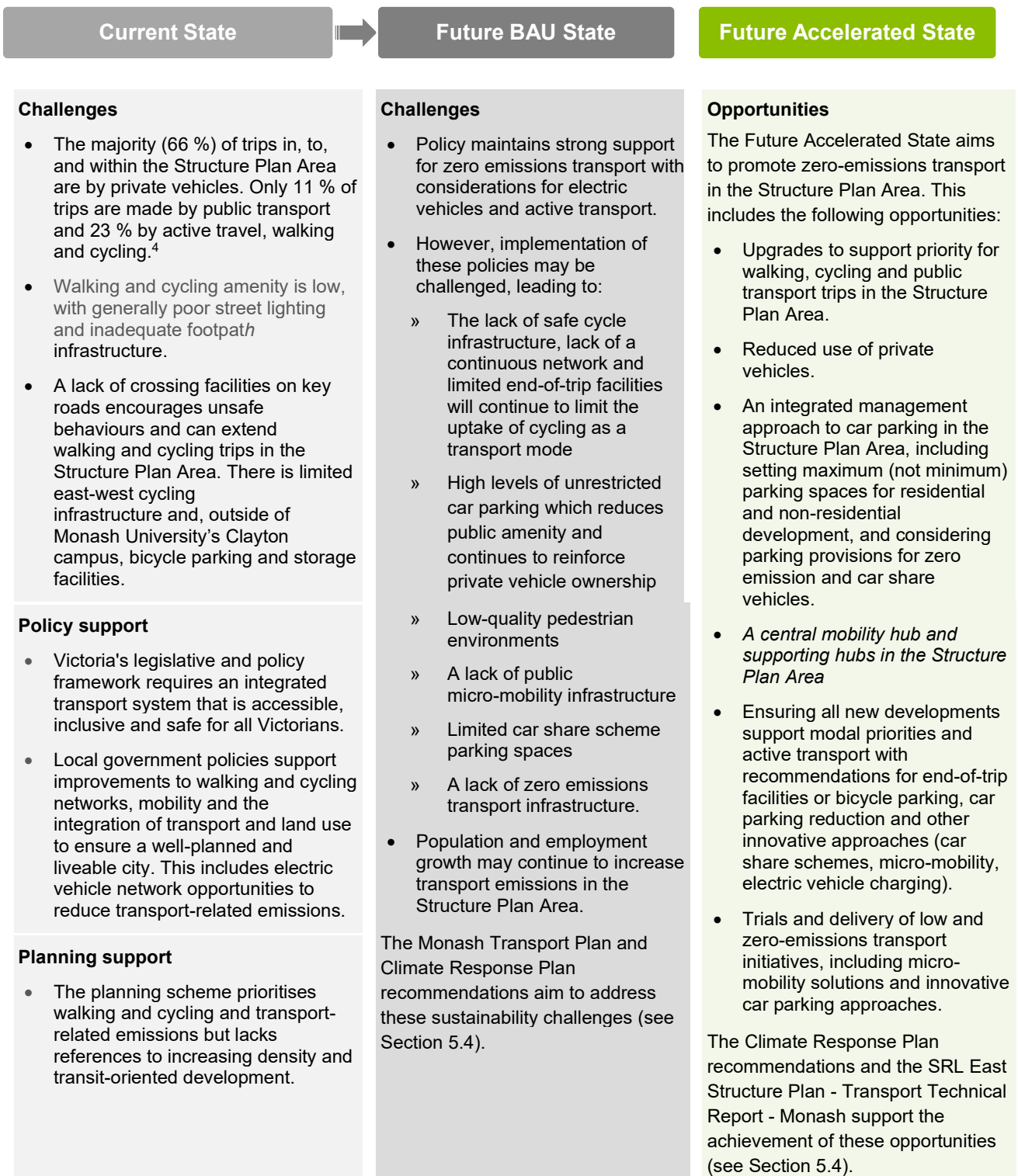
4.1.2 INTEGRATED WATER MANAGEMENT



4.1.3 CIRCULAR ECONOMY AND SUSTAINABLE PROCUREMENT

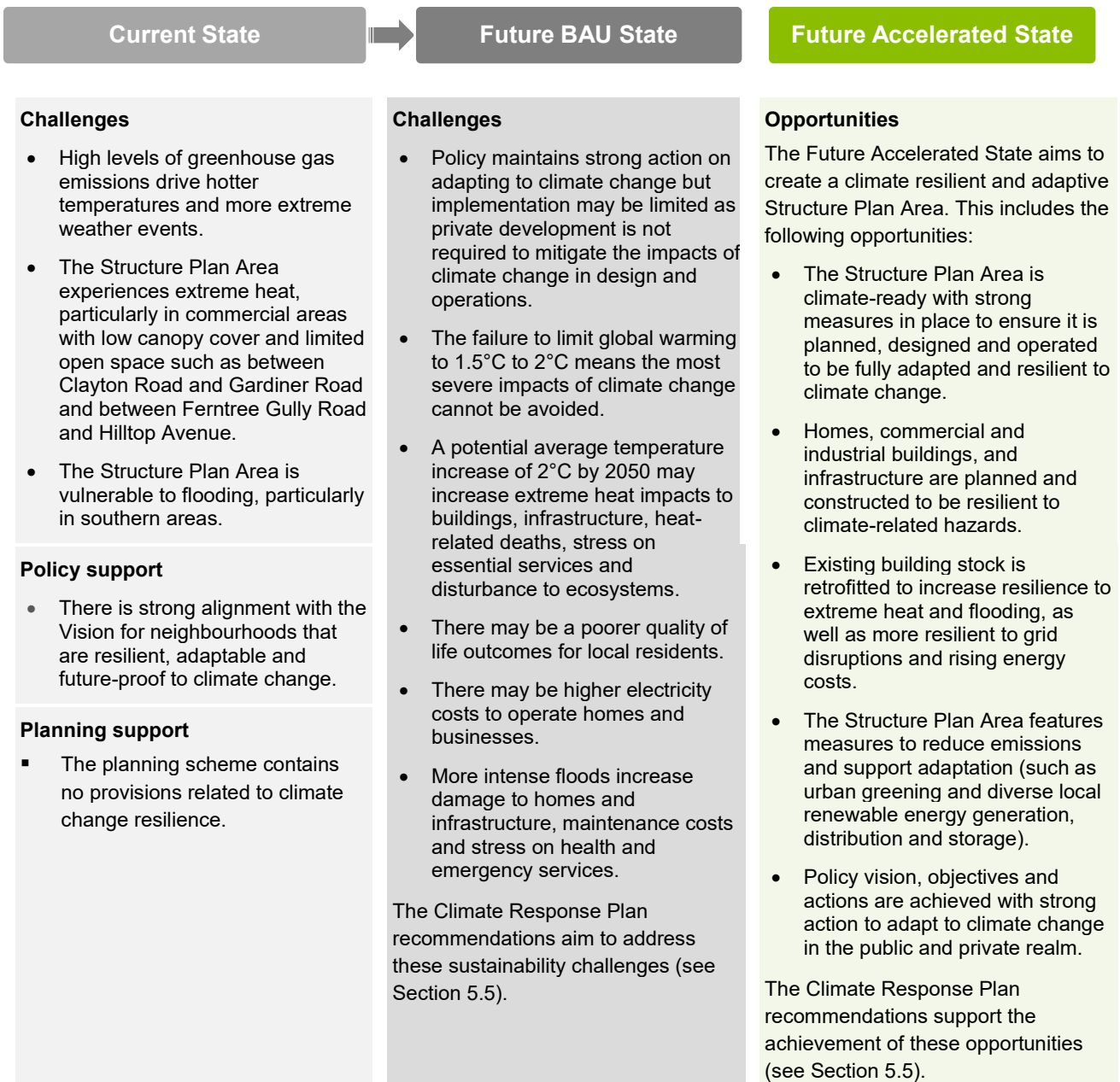


4.1.4 PLACE-BASED MEASURES TO PROMOTE ZERO EMISSIONS TRANSPORT

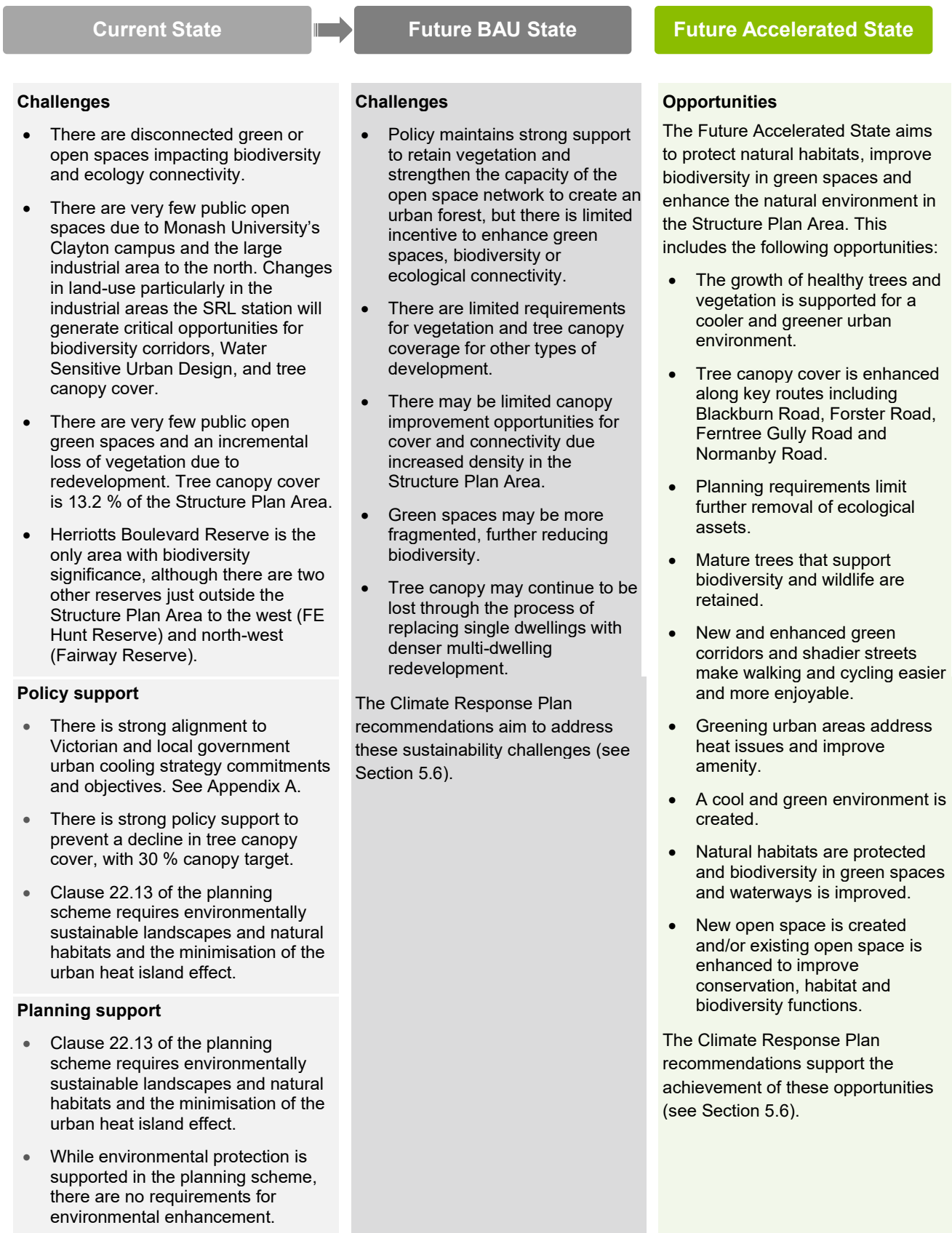


⁴ Refer to the Monash Transport Plan.

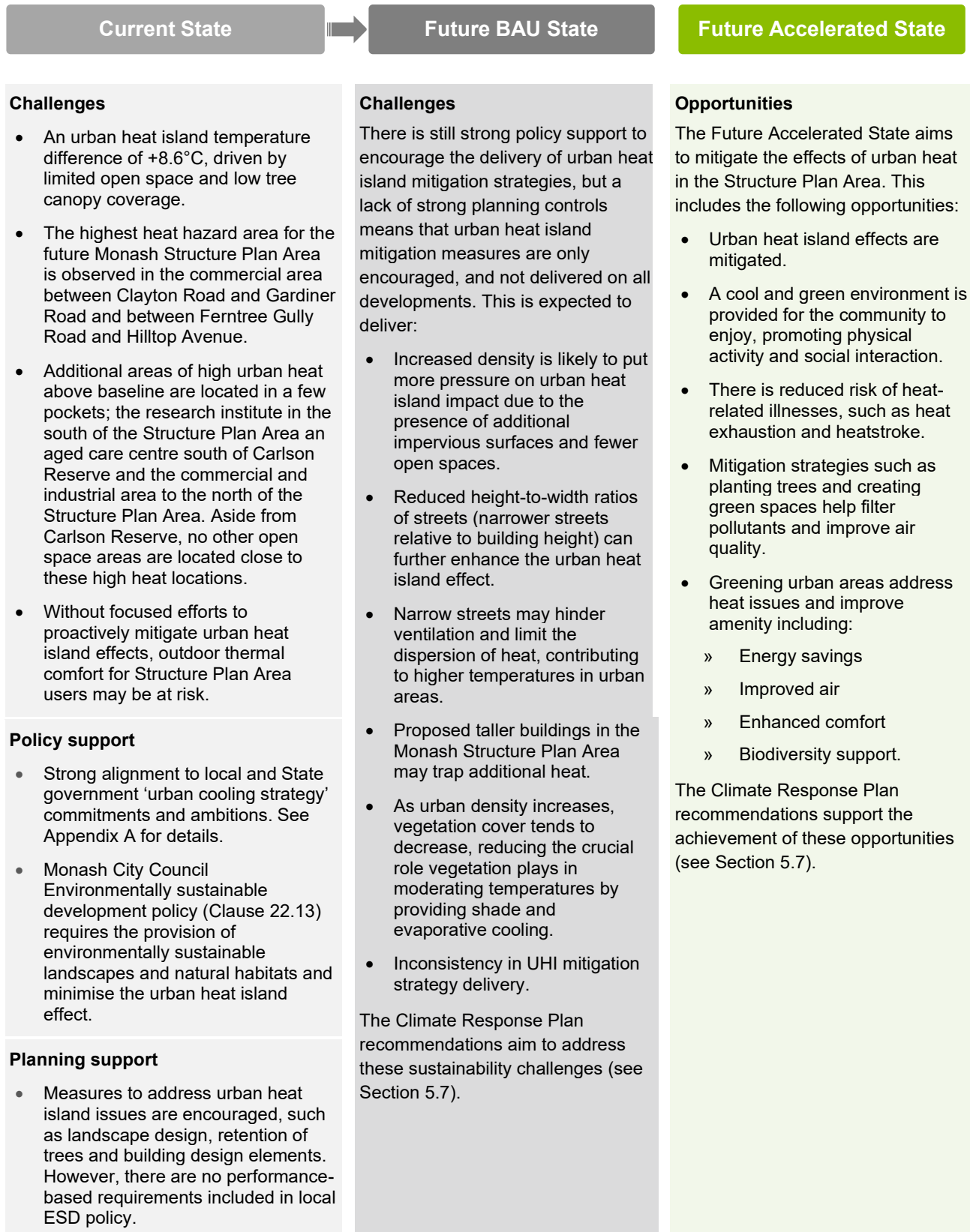
4.1.5 CLIMATE CHANGE ADAPTATION



4.1.6 ENVIRONMENTAL ENHANCEMENT AND PROTECTION



4.1.7 URBAN HEAT ISLAND STRATEGY



4.2 Case for change

Delivering increased density concentrated around mass rapid transit will support greater connectivity, connected planning and zero emission mobility choices for local communities, delivering sustainability opportunities. In transitioning to a more compact, densified built form, innovative approaches to deliver Integrated Water Management (IWM), enhance ecological values, and urban heat island mitigation are required – these will not be delivered under current planning controls. This may result in continued sustainability challenges in the Structure Plan Area and impacts on its liveability, connectivity and productivity.

If planning controls do not address the sustainability challenges now, the future state of the Structure Plan Area may see unsustainable development, with exposure to climate risk, an increase in greenhouse gas emissions, health impacts from exposure to urban heat, and costly retrofits to upgrade, rebuild and address sustainability challenges. The analysis of the sustainability focus areas above highlights that:

- The Monash Structure Plan Area is currently experiencing sustainability challenges.
- Current Victorian and local government policy supports addressing current and emerging climate change and sustainability challenges in the Monash Structure Plan Area. However, the implementation of these policies in the municipal planning schemes is limited, and there is generally a lack of planning support to deliver sustainability policy outcomes (see Appendix A).
- Under a Future Business as Usual State, it is expected that current sustainability challenges will remain or worsen due to the projected growth and densification of the Structure Plan Area, such as accelerated higher density development around the SRL station. This will create a gap between what is expected and what the aspirations are for the Monash Structure Plan Area. This state is unacceptable as the Monash Structure Plan Area will fail to achieve sustainability policy objectives, or the Monash Vision.
- Under a Future Accelerated State, a number of sustainability opportunities have been identified that support the Monash Structure Plan Area achieving regional sustainability policy objectives, and the Monash Vision.

This Climate Response Plan provides recommendations to close the gap between what is expected to be delivered under the Future Business as Usual State, and what is possible under the Future Accelerated State. The Current State and the Future Accelerated State through the Structure Plan delivery are shown in Figure 4.1.

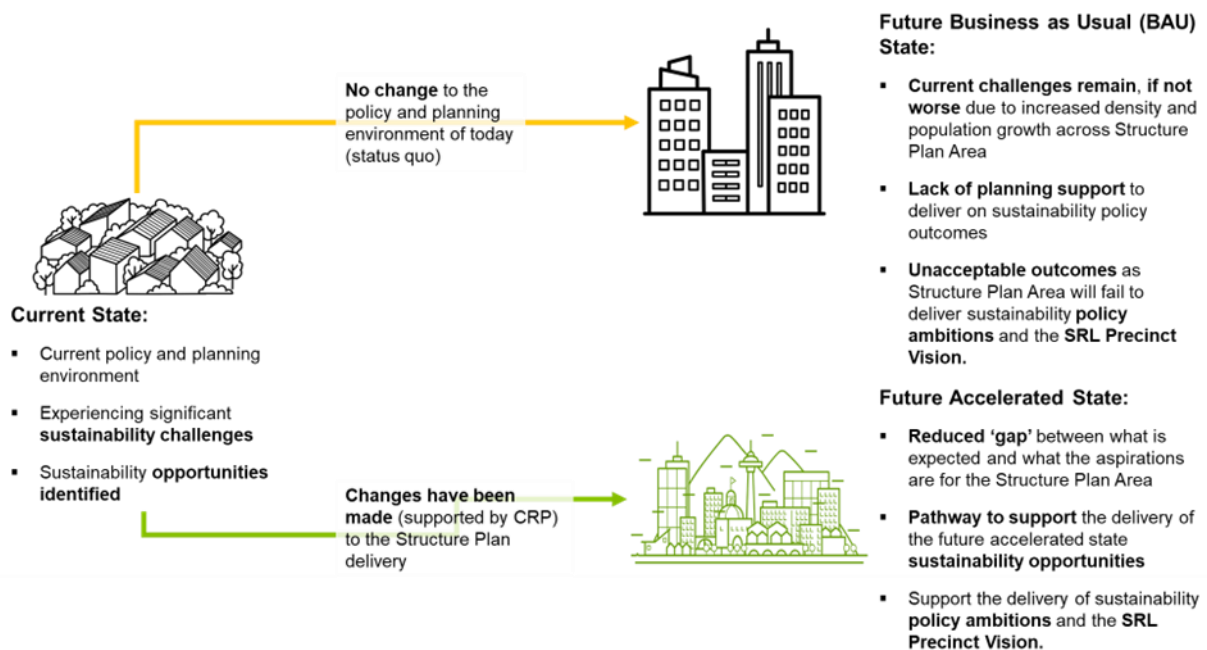


FIGURE 4.1 CURRENT AND FUTURE STATE IN MONASH STRUCTURE PLAN AREA THROUGH THE STRUCTURE PLAN DELIVERY

5. Recommendations

This section sets out recommendations to inform the Monash Structure Plan.

The recommendations address the sustainability challenges of the Structure Plan Area, and seek to help achieve the SRL sustainability vision, and the sustainability objectives of the Monash Vision.

The goal is for the Structure Plan Area to become more liveable, connected and productive as its population grows and density increases, with greater climate change resilience and improved sustainability.

The recommendations aim to close the gap between what is expected under the Future Business As Usual State, and what is possible under the Future Accelerated State.

They also contribute to achieving Victorian and local government sustainability objectives.




CATEGORIES OF RECOMMENDATIONS

Land use planning is critical to influencing how cities are shaped, perform and respond to climate. However, creating sustainable, climate-responsive neighbourhoods should not rely on just planning controls.

Other opportunities such as partnerships and advocacy support partnerships and investment and other activities to build climate change resilience and improve sustainability.

This is why the recommendations are sorted into the three categories defined in Table 5.1.

TABLE 5.1 RECOMMENDATION CATEGORIES

	<p>Structure Plan responses guide and promote sustainability and climate considerations in the future planned land use, built form, and public spaces to support changing community needs.</p> <ul style="list-style-type: none"> • Provides long-term guidance to authorities about land use changes and buildings on private and public land. • Provides community and investor certainty about expectations for the future form of development.
	<p>Planning Scheme responses recommend new planning controls to improve the climate responsiveness of development in the Structure Plan Area.</p> <ul style="list-style-type: none"> • Sets out policies and provisions that regulate how land can be used or developed. • Creates binding requirements that can influence buildings and other infrastructure.
	<p>Other opportunities promote partnerships with government, industry and other organisations.</p> <ul style="list-style-type: none"> • Can include guidance, measurement tools or rating tools, or staging implementation to support Structure Plan and Planning Scheme responses. • Builds relationships and provide access to more resources, a pool of diverse skills and knowledge and shared expertise to foster innovation and creativity. • Enables access to new markets and customers, cost and risk sharing.

No single measure will deliver the full scale of change required to address the sustainability challenges in the Structure Plan Area. Recommendations are therefore not prioritised for each focus area. Adopting the full suite of recommendations is advised.

While recommended measures are provided against each sustainability focus area, measures may overlap with each another to achieve multiple outcomes and co-benefits across economic, environmental and social sustainability. Where this occurs, this is noted in the recommendation.

Recommended measures related to Planning Scheme Amendments are advisory only. At this stage, the Climate Response Plan is not able to provide definitive advice on where planning controls should 'sit' in policy, as the planning structure and zoning is not yet resolved. These recommendations will be subject to further testing and refinement during the Planning Scheme Amendment process in 2024 and 2025.

STRUCTURE OF RECOMMENDATIONS

The recommendations are categorised under each sustainability focus area and structured as follows:

- **Focus area summary** – summarises the focus area and the key challenges in the Monash Structure Plan Area, as well as the defined outcomes being sought.

Each recommendation includes:

- **Description** – describes the recommendation, including its application to planning zones or building typologies where required.
- **Impact** – describes potential impacts and benefits to be gained from implementation.
- **Implementation considerations** – considerations for implementing the recommendation, including key considerations for the Structure Plan Area and application to planning zones or building typologies where required.

5.1 Realising net zero

SRL is being delivered in the context of targets to rapidly reduce greenhouse gas emissions across the economy and community.

The Victorian Government has committed to an accelerated target to reduce the state's greenhouse gas emissions to net zero by 2045. This target is likely to be among the government's greatest and most critical tasks of the next two decades.

In simple terms, net zero emissions means balancing the greenhouse gas emissions released into the atmosphere, and the greenhouse gas emissions that are absorbed and stored (Climate Council 2023). Achieving net zero requires measures to reduce atmospheric greenhouse gases emissions, so that any remaining emissions can be naturally absorbed and stored, or removed through other methods (UN 2024).

How we consume energy will be a key determinant of Victoria's success or failure to achieve net zero. Electricity consumption is Victoria's major emissions source, much of which is used in buildings. In Australia, buildings account for over 50 per cent of electricity use and almost a quarter of greenhouse gas emissions (GBCA 2023).

Without strong action to transition new development to fossil-fuel free energy and energy efficient designs, the Monash Structure Plan Area will fail to contribute to Victoria's net zero target. Integrating net zero outcomes into new development is critical to avoid the steep costs and technical challenges of energy efficiency retrofits.

The knowledge and technology to decarbonise buildings is available. There is significant opportunity to cut emissions from the built environment in a deep, rapid and sustained way, and to balance emissions from other sectors which are harder to decarbonise.

⁵ Emissions data has been sourced from Snapshot Climate, a publicly available tool developed by Beyond Zero Emissions and Ironbark Sustainability (<https://snapshotclimate.com.au/>). Municipal energy-related emissions data for Monash has been measured by taking the average of Monash electricity and gas use for the period 2021/22. Please note that this figure is intended to be indicative only and is not based on precinct-specific carbon emissions modelling.

Energy use represents the biggest source of emissions in SRL East Structure Plan Areas, but achieving net zero will require Victoria to decarbonise its transport systems, industrial processes, product use and waste. For this reason, the measures recommended in Realising Net Zero should be considered alongside other focus areas. The initiatives in Circular Economy and Sustainable Procurement provide more insight into how SRL can address embodied carbon in materials and waste with sustainable design and construction. To understand how SRL can minimise emissions by reducing car dependency and promoting zero-emissions vehicles – see Place-based measures to promote zero emissions transport.

What's the challenge in the Monash Structure Plan Area?

Energy use is the major emissions source in the Monash Structure Plan Area, which accounts for 72 per cent of municipal greenhouse gas emissions. This equates to approximately 2,068,000 tonnes of carbon emissions (CO₂e) each year.⁵ Most of this energy is consumed in buildings.

Key challenges include:

- The Monash Structure Plan Area has a large number of commercial and industrial buildings, which contribute significant emissions due to energy consumption.
- Most residents rent their homes, and there is a high proportion of flats and apartments. Misalignment of incentives between landlords and renters may present challenges to implementing energy efficiency upgrades.
- Existing dwellings have very low energy efficiency – the average existing dwelling has a 1.75 NatHERs star rating.⁶

⁶ NatHERs star ratings have been sourced from CSIRO Energy Rating Dashboard (2024). Data has been measured by taking the average star rating for existing dwellings in the City of Monash between the period May 2016 – April 2024. Please note that this figure is intended to be indicative only and is not based on precinct-specific energy modelling.

- The Monash Structure Plan Area has a lower uptake of on-site small-scale solar installations – the overall installation rate is 9 installations per 100 dwellings, compared to the statewide average of 34.⁷

In addition to this, the Monash Vision identifies the potential provision for:

- Taller mixed-use developments
- Higher-density apartments.

While SRL presents opportunities to enhance the Monash Structure Plan Area's sustainability performance, it will also generate more intensive development to accommodate a growing population. This will increase energy demand, creating major challenges to realising Victoria's net zero target.

Failing to set higher sustainability standards for development in the Structure Plan Area would be a missed opportunity and could also increase risks of obsolescence and poor adaptation to sustainability and climate-related challenges.

Without strong action to transition new development to renewable energy sources that are low in carbon, highly efficient, and offset with credible nature-based solutions, the Monash Structure Plan Area will fail to contribute to Victoria's net zero target. Integrating net zero outcomes into new development is even more critical to avoid the steep costs and technical challenges of retrofitting energy efficiency measures.

Policy and planning challenges

Appendix A summarises the strategies and policies reviewed to inform this Climate Response Plan. Findings include:

- Victorian Government policies demonstrate strong ambition to reduce emissions to achieve net zero by 2045.
- The proposed updated Victorian Renewable Energy Target of 95 per cent renewable electricity by 2035 is considered world leading.

- Victoria's Climate Change Strategy, and Plan Melbourne 2017-2050 (2017b) promote energy demand reductions, energy efficiency upgrades and renewable electricity uptake. The sustainability and climate policies of Monash City Council align with these goals.

- Planning controls do not require any type of development to demonstrate how it will be net zero ready.

- However, because the electricity grid remains primarily powered by fossil fuels, population growth in the Monash Structure Plan Area will drive significant increases in emissions. This can be addressed by increasing uptake of on-site renewable energy to reduce emissions at the source.

- Under current regulations, buildings are only required to achieve the standards set by the:

- » National Construction Code (NCC) – Section J Energy Efficiency. Updated energy efficiency standards in the NCC will reduce emissions from new residential development.
- » Built Environmental Sustainability Scorecard (BESS) Framework (see Section A-2 of this report).

Desired outcomes in the Monash Structure Plan Area

To achieve the Monash Vision, the Monash Structure Plan Area should be sustainable, climate responsive and net zero ready. This involves planning for new energy technologies to enable a smooth, orderly transition to net zero. It also requires embracing sustainable design practices so that new developments are low in carbon and powered by renewable energy. This will support the following outcomes:

- **Phase-out fossil fuels** – development in the Monash Structure Plan Area is achieves net-zero emissions by or before 2045 and is free from fossil fuels where feasible (for example, by phasing out new gas connections).

⁷ Solar uptake is based on small-scale solar installation data by postcode and state-level battery installation data is from 2022 and sourced from the Clean Energy Regulator, and 2021 census

data, accessed via ABC (2023). Please note that data is intended to be indicative only and is not based on emissions modelling for the Structure Plan Area.

- **Energy supplied from renewable resources** – the Monash Structure Plan Area supports the transition to new, diverse energy technologies for local renewable energy generation, distribution and storage.
- **Reduced energy consumption** – the Monash Structure Plan Area reduces energy consumption through efficient buildings that are built with lower carbon materials and operated with smart energy management strategies.
- **Remaining emissions mitigated** – development in the Monash Structure Plan Area addresses residual emissions with high-integrity, nature-based offsets that provide environmental benefits that can be seen.

Recommendations and other opportunities

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for realising net zero – aiming to close the gap between the greenhouse gas emissions challenges facing the Structure Plan Area and the desired outcomes, to help achieve net zero emissions:

- **Recommendation 1A** – Net zero buildings (Structure Plan response)
- **Recommendation 1B** – Private development sustainability certification (Planning Scheme response)
- **Opportunity 1C** – Partnerships for a decarbonised energy supply (Other opportunities).

Recommendation 1A – Net zero buildings

Structure Plan response



Description

A Structure Plan response is recommended to encourage all developments in the Monash Structure Plan Area to support achievement of net zero by 2045, in line with Victoria's emissions reduction targets

The Structure Plan response could also encourage developments in the Structure Plan Area on private and public land to avoid and reduce emissions through their design and construction.

Impact

- This Structure Plan response could generate benefits including:
 - » Establish net zero as a high priority early and set expectations on the level of energy performance expected for development as early as possible
 - » Support net zero by encouraging development to be fossil fuel free, highly energy efficient and powered by renewables, built with lower upfront emissions and embodied carbon (for new developments), and offset with credible nature-based solutions for remaining emissions
- This will have the following positive impacts:
 - » Reduced emissions
 - » Reduced energy consumption
 - » Improved electricity grid resilience
 - » Improved air quality, human health and wellbeing
 - » Improved community response to the climate emergency
 - » Reduced exposure to risks associated with transition to a low-carbon economy (such as future carbon and energy policies)
- Support implementation of:
 - » Victoria's greenhouse gas emissions reduction target of 75 to 80 per cent by 2035 and net zero by 2045 by supporting the delivery of net zero buildings, which is not currently a requirement in the planning scheme

- » Victoria's Climate Change Strategy, which supports action to transition from gas to renewable electricity, improve household energy efficiency, reduce building energy demand, and deliver local renewable energy projects
- » Monash City Council's Environmental Sustainability Strategy and Zero Net Carbon Action Plan, which support participation in regional and local energy efficiency, renewable energy and climate adaptation programs, and action to reduce municipal emissions.

Implementation considerations

- The response is recommended to be supported by Recommendation 1B.
- There is opportunity for the Monash Structure Plan to include the following directions and actions:
 - » Advance a Planning Scheme Amendment as proposed in Recommendation 1B
 - » Encourage (and require where feasible) industrial and commercial developments to use zero emissions energy sources, and not gas
 - » Future proof and plan for new energy technologies to be powered with 100 per cent renewable electricity – see Opportunity 1C
 - » Enable existing developments to be more energy efficient to reduce energy consumption and demand
 - » Construct new development to have low embodied emissions by using lower carbon materials and sustainable design principles
 - » Offset any remaining emissions with credible nature-based solutions.
- Precedent for this recommendation can be found in:
 - » Arden Structure Plan Objective 9 – Establish strong environmental governance that provides certainty, accountability and transparency to achieve the precinct's net zero carbon emissions target by 2040
 - » Fishermans Bend Framework Objective 7.1 – Develop Fishermans Bend as a zero net emissions precinct and Objective 7.3 – Maximise renewable energy generation, storage and distribution.
- Key considerations for the Monash Structure Plan Area:
 - » Significant change in land use is projected in the Monash Structure Plan Area, with areas that will transition from low-scale industrial settings to intensified urban areas

- » This transition will require holistic improvements to the core of the Structure Plan Area, with an increase in higher density commercial development
- » The type and scale of development offers opportunity to introduce initiatives such as Green Star certifications, which have wide application in the commercial sector
- » The diverse employment opportunities in the Structure Plan Area may mean the approach to sustainability requires tailoring to the sector of interest
- » Different approaches and support may be required for industrial, commercial, research and education land uses to contribute to emissions reductions
- » Achieving net zero in development may involve different levels of effort depending on the type of development typology, land use and other contextual factors
- » Potential cost increases may be involved, such as for existing buildings to eliminate fossil fuels and transition to renewable electricity.

1B – Private development sustainability certification

Planning Scheme response



Description

A Planning Scheme Amendment is recommended to require developers to align with achieving net zero by 2045 by achieving a Green Star Buildings (or equivalent independent standard) certification.

Impact

- This Planning Scheme response could generate benefits including:
 - » Promote broader sustainability and climate resilience outcomes using tools such as Green Star (or equivalent) with holistic sustainability criteria that align with SRLA's vision and sustainability focus areas
 - » Create opportunities for higher financial returns, as Green Star-certified assets deliver higher returns on average – 16.4 per cent higher capital value per squared metres, 13.5 per cent higher annual return**, 23 per cent longer weighted average lease expire (WALE), 66 per cent less electricity and 51 per cent less water (Green Building Council of Australia 2023)
 - » A Green Star requirement supports developers and building owners to become leaders in sustainability and climate action by preventing disadvantage for developers seeking a sustainability certification. Sustainability credentials can also help attract tenants and reduce risk exposure
 - » Ensure new development over a certain threshold is designed and operated to achieve net zero emissions by 2045, and development below the implementation threshold can contribute to emissions reduction in a cost-appropriate manner
 - » Reduce embodied and operational emissions in design if sustainable design principles are promoted by using a holistic sustainability rating tool
 - » Increase energy resilience and reduce emissions if development uses on-site renewables energy generation and storage
 - » Support net zero if development is required to offset remaining emissions with credible nature-based solutions that deliver environmental co-benefits May reduce exposure to transitional risks

associated with climate change, such as future carbon and energy policies, and increased fossil fuel.

Implementation consideration

- The Planning Scheme Amendment is recommended to apply to the following thresholds:
 - » 5 Star Green Star Buildings (or equivalent independent standard) certified rating to be achieved for a new building or additions that contain 5,000 square metres or more of gross floor area.
 - » For smaller developments below these thresholds, consider seeking BESS-8 'Excellence' rating. 'Excellence' is defined in BESS as an overall score of 70 per cent or higher. Must also include exceeding the requirements of BESS (Energy) by a further greenhouse gas emissions reduction of 20 per cent.
- Precedent can be found in:
 - » City of Melbourne Amendment C376 (2023) and Fishermans Bend Precinct planning controls, where developments above 5000 squared metres require a 5 Star Green Star Buildings rating
 - » Arden Precinct planning controls also promote the achievement of a 6 Star Green Star rating.
- Potential barriers to uptake for this Planning Scheme response include:
 - » Green Star certification is verified by an independent third-party assessment process managed by the Green Building Council of Australia (GBCA)
 - » Green Star certification evidence from development applicants is to be reviewed by a qualified Green Star Accredited Professional (GSAP)
 - » Potential cost increases to developers to achieve a Green Star certified rating, depending on the scale of a development and building application. However, Green Star buildings deliver better returns on average, and costs may be reclaimed through energy savings and increased property values. Refer to the Green Star Buildings Business Case: <https://gbca-web.s3.amazonaws.com/media/documents/green-star-buildings-the-business-case.pdf>.
- A number of considerations and incentives would support the adoption of a Green Star Buildings certification including:
 - » In Australia, the Green Star suite of tools provide a best-practice, holistic framework that directly aligns with SRLA's sustainability focus areas and

can be used to address the current building performance gaps in the planning scheme.

- » Delivering Green Star certification maximises opportunities to drive best-practice sustainability performance and offers assurance that sustainability and climate resilience is embedded in the final building through minimum performance requirements
- » Larger non-residential and multi-unit residential developments above a certain threshold within the Structure Plan Area are expected to have sufficient financial resources to achieve certification.
- » Green Star certification has been demonstrated to deliver a broad range of benefits for many stakeholders. The analysis of ratings tools and frameworks suggest the Green Star suite of ratings tools are the most appropriate for guiding a holistic climate response, and achieving the following performance outcomes:
 - Fossil fuel free
 - Fully electrified
 - Highly energy efficient
 - Fully powered by renewables
 - Built with lower upfront emissions and embodied carbon (for new developments)
 - Offset remaining emissions with credible nature-based solutions
- » Integrating Green Star Buildings in the planning stage facilitates the certification process by reducing development application fees, providing infrastructure charges rebates, deferral of fees, height and density bonuses and green door policies – refer to the GBCA Green Star Buildings: Fact Sheet for Government for more information: <https://gbca-web.s3.amazonaws.com/media/documents/green-star-buildings-for-government.pdf>.
- Administrative considerations include:
 - » Green Star Buildings raise standards for new developments to address the climate and sustainability challenges of the next decades. Discretions and exemptions may need to be considered by the responsible authority where it is demonstrated that Green Star Buildings certification is unachievable.
 - » Where a Green Star certification is achieved, the following focus area recommendations will be impacted:

- Integrated water management – alternative water sourcing and demand reduction strategies will largely be covered in the Green Star framework
- Circular economy and sustainable procurement – construction and operational waste reduction strategies and sustainable construction material specification strategies will largely be covered in the Green Star framework
- Climate change adaptation – climate change risk management standards will largely be covered in the Green Star framework
- Environmental enhancement and protection – greening of buildings, increased canopy planting, protection of vegetation and climate adaptive landscaping will be largely covered in the Green Star framework
- Urban heat island strategy – measures to minimise the urban heat island effect from solar gains will be largely covered in the Green Star framework.

Opportunity 1C – Partnerships for a decarbonised energy supply

Other opportunities



Description

There is opportunity for the Victorian Government to establish a partnership with a local energy company and/or other relevant organisation(s) (such as the Department of Energy, Environment and Climate Action, ClimateWorks, ARENA, the local government) to investigate and implement a decarbonised energy supply, distribution and storage in the Structure Plan Area, and better demand management solutions.

Potential solutions that could be investigated:

- Renewable energy solutions in the Structure Plan Area:
 - » Local renewable energy generation
 - » New energy solutions including hydrogen, geothermal and bioenergy
- Distribution and storage solutions:
 - » Smart grids (digital technology to monitor and control the flow of electricity)
 - » Micro-grid (localised/neighbourhood-scale distribution system)
 - » 2-way grids (allowing for bidirectional flow of electricity; while Australian regulations do not currently provide for 2-way grids, this will provide a future opportunity)
 - » Energy storage opportunities including batteries and other storage systems
- Demand management solutions using new technology (such as smart grids, blockchain, predictive management, optimisation, system efficiency).

Impact

- This Opportunity could generate benefits including:
 - » Help to eliminate implementation barriers and create significant opportunities to drive transformations in energy supply, distribution and storage, and demand management

- » Increase access to resources, expertise and innovation opportunities, accelerating the development and deployment of a decarbonised energy supply in the Structure Plan Area
- » Support expanded, cost-effective delivery of decarbonised energy solutions by leveraging solutions that benefit from the economies of scale
- » Partnerships with energy companies may provide access to new customers that may not otherwise decarbonise their energy supply
- » Reduce emissions and energy bills, particularly if on-site renewables energy generation and storage is involved
- » Reduce the level of risk associated with transitioning to a decarbonised energy supply
- » Fast-tracking solutions to achieve state targets and growing knowledge and skills in the clean energy sector.

Implementation considerations

- A significant change in land use is projected in the Monash Structure Plan Area, with areas that will transition from low-scale industrial settings to intensified urban areas.
- This transition will require holistic improvements to the core of the Structure Plan Area, with an increase in higher-density commercial development. The type and scale of development offers opportunity to introduce initiatives such as Green Star certifications, which have wide application in the commercial sector.
- The diverse employment opportunities in the Structure Plan Area may mean the approach to sustainability requires tailoring to the sector of interest. Different approaches and support may be required for industrial, commercial, research and education land uses to contribute to emissions reductions.
- Achieving net zero across development may involve different levels of effort depending on the type of development, the land use and other contextual factors.
- Potential cost increases may be involved, such as for existing buildings to eliminate fossil fuels and transition to renewable electricity.

5.2 Integrated water management

Integrated water management (WM) brings together all facets of the water cycle to maximise social, environmental and economic outcomes. It considers how water cycle services are provided and the drivers or constraints that influence its management, such as climate change, population growth, land use change, environmental decline and community preferences.

IWM aims to deliver water sensitive and resilient communities while mitigating the adverse impacts of climate change, including extreme flooding and drought events.

Water for Victoria (2016) and the Integrated Water Management Framework for Victoria (2017a) provide strong policy support for the IWM planning approach by identifying measures to sustainably manage water resources, including establishing the IWM forums to help deliver on IWM objectives using a place-based planning approach. These policies are further reinforced through:

- Plan Melbourne 2017-2050 (2017b) which sets out a key directive to integrate urban development and water cycle management to support a resilient and liveable city
- Target 150, a water efficiency program encouraging Melburnians to limit water consumption to 150 litres per person, per day.
- Examples of IWM in the urban environment are shown in Figure 5.1.

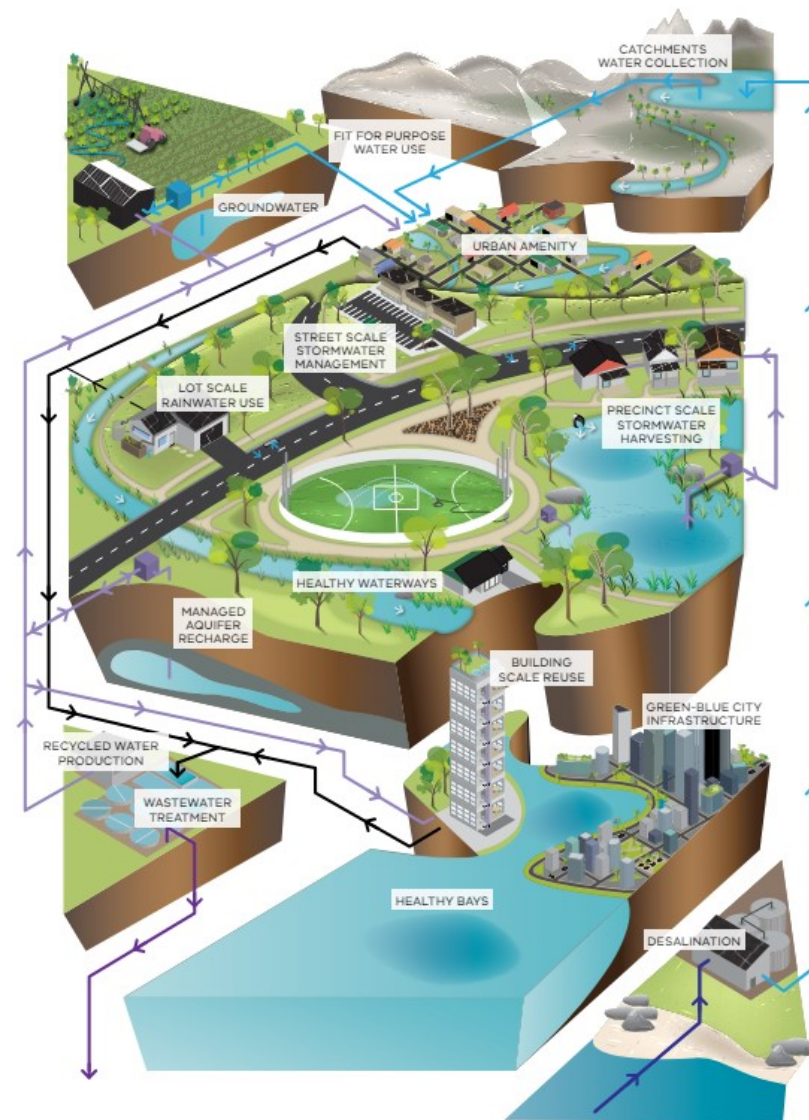


FIGURE 5.1. EXAMPLES OF THE APPLICATION OF IWM IN THE URBAN ENVIRONMENT (DELWP 2017)

What's the challenge in the Monash Structure Plan Area?

The Monash Structure Plan Area experiences shallow flooding in some areas during a 1 % AEP + climate change event, with a higher risk around main drains. No alternative water supply network exists for the Structure Plan Area so development currently relies on a potable water mains network (SRL East Structure Plan - Flooding Technical Report 2024).

While flooding events provide surplus water in the Monash Structure Plan Area water availability for human consumption, biodiversity and urban greening will become increasingly threatened and expensive in the face of climate change.

As Victoria becomes warmer and drier due to climate change, it is expected that streamflows to some catchments could reduce by around 50 per cent per year by 2065 (Water for Victoria, 2016). At the same time, Melbourne may need 85 GL of additional water by 2030, and 600 GL by 2070 (Greater Western Water et al. 2022).

Under a Future Business as Usual State in the Monash Structure Plan Area, water consumption is expected to increase 6 per cent, including a 13 per cent rise in industrial use by 2051, placing pressure on existing potable water sources (ESC 2023).

Policy and planning challenges

Appendix A summarises the strategies and policies reviewed to inform this Climate Response Plan.

Findings include:

- The IWM Framework for Victoria (2017a) is supported by other key Victorian policies to strengthen the IWM planning process. This includes Plan Melbourne 2017-2050 (2017b), which supports the use of all water sources so the city remains liveable and sustainable, and to reduce reliance on drinking-water supplies, and the Greater Melbourne Urban Water & System Strategy: Water for Life (2022) which sets out the need for alternative water supply to meet Melbourne's needs.

- Monash City Council policies support strong ambitions for IWM outcomes, including setting targets for decrease in potable water usage for public spaces and private developments. For example, the Monash IWM Strategy 2014 sets a target for residents to maintain potable water consumption to 120 litres, per person, per day.
- The planning controls have come some way to embedding these policy goals in the planning scheme for the Monash Structure Plan Area at a catchment and development scale. For example, water efficient fixtures and irrigation and water sensitive urban design approaches are encouraged.
- While the planning scheme requires connection to alternative water sources for residential development, where it exists, there is no similar requirement for commercial or industrial development.

Future challenges

An appropriate neighbourhood-scale planning response will be required to address the water management challenges and planning challenges facing the Monash Structure Plan Area in future decades. With the increase in development and density and population, combined with the complexity of stakeholders involved in water management, issues such as increased flooding risk and reduced water availability from hotter and drier conditions may be exacerbated in the Structure Plan Area. Not delivering on these principles means the liveability of the Monash Structure Plan Area and its resilience to a warmer and drier climate may be at risk. This will significantly increase the challenge for Greater Melbourne to ensure sustainable growth and a continued supply of water in the decades to come.

Urban development and redevelopment presents the greatest opportunity to build the required infrastructure and create demand for alternative water sources in the Structure Plan Area. Industrial or commercial uses may be attracted to the Monash Structure Plan Area if an alternative water source is available.

Desired outcomes in the Monash Structure Plan Area

- To deliver on the Vision, the Monash Structure Plan Area should embed IWM principles to ensure resilience to climate change effects and extreme events such as flooding, as well as create functional, high-quality green networks that keep water in the landscape. The Structure Plan Area should support IWM by considering the whole water cycle early in the planning and design of new urban areas to improve the water performance of new buildings and the broader Structure Plan Area. This could support the liveability of the Monash Structure Plan Area and ensure its resilience to a warmer and drier climate, supporting the following outcomes:
- **Ensure a safe, secure and affordable supply of water** from a diverse range of water supplies and sources, embedding water efficiency in all new development, to manage water demand to less than 150 litres per person, per day in line with Melbourne's targets
- **Achieve or exceed Victoria's stormwater quality objectives** to protect urban environments and maintain waterway health
- **Enable effective and affordable wastewater systems** that meet public health and environmental standards and maximises waste to resource opportunities
- **Retain water in the landscape** to ensure healthy and valued urban places, cool green urban spaces and support natural water cycles
- **Manage existing and future flood risk from climate change events** to maximise outcomes for the community and minimise risk to life and property.

Recommendations and other opportunities

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for IWM – aiming to close the gap between the water challenges facing the Monash Structure Plan Area and the desired outcomes:

- **Recommendation 2A** – Place-based integrated water management (Structure Plan response)
- **Recommendation 2B** – Alternative water supply (Planning Scheme response)
- **Opportunity 2C** – Partnerships to support integrated water management (Other opportunities).

Recommendation 2A – Place-based integrated water management

Structure Plan response



Description

A Structure Plan response is recommended to encourage all new development and public realm to incorporate innovative place-based integrated water management (IWM) interventions that manage the risk of flooding to future development, enhance waterway health, and deliver water sensitive neighbourhoods.

Impact

- This Structure Plan response could generate benefits including:
 - » Ensure new developments are encouraged to recognise and consider the contribution of water in creating liveable neighbourhoods that are resilient to climate change impacts
 - » Reduced demand on the metropolitan water supply system by increasing use of alternative water, in line with Victorian Government policy objectives
 - » Reduced localised flooding impacts around the Monash University Main Drain
 - » Enhanced delivery of urban greening and cooling outcomes by retaining water in the landscape and providing a passive source of irrigation
 - » Improved quality of stormwater entering waterways by enhancing how it is captured and filtered in the urban environment, and reducing flooding impacts (less than 1 % AEP)
 - » Support for community wellbeing by providing more greener public and private realms, and access to healthier, cleaner waterways
 - » Reduced infrastructure costs over the long run by creating affordable and diversified sources of water.

Implementation considerations

- Potential strategies to deliver integrated water management interventions in the Monash Structure Plan could include:

- » Set minimum infiltration requirements and capture or divert stormwater into tank or Water Sensitive Urban Design assets to provide an adequate source of irrigation for green assets, spaces and landscaping
- » Integrate water sensitive urban design into design of key active transport corridors around the Monash SRL Station, and Structure Plan Area core (such as the proposed new street grid and town centre).
- » Set increased rainwater tank requirements in new development to ensure appropriate on-site retention, treatment and reuse of water, and reducing stormwater runoff
- » Support the delivery of water infrastructure to provide alternative water as a substitute for potable water for toilet flushing, laundry and irrigation in public and private development
- » Adopt additional built form setbacks to support conveyance of flood water in flood affected areas, such as new development around Monash University Drain or the SRL Station.
- » For capital works, support the use of alternative water as a substitute for potable water where possible
- Precedent can be found in:
 - » Fishermans Bend Framework Objectives 5.1 and 5.2, which set out strategies and planning controls to harvest, treat and reuse stormwater to minimise flooding, maximise water reuse and minimise potable water use
 - » Arden Structure Plan Objective 19, which seeks to minimise the risk of flooding through creative solutions, including water sensitive urban design on specific streets and green links; and Objective 20 which aims to provide access to high-quality alternative water to be used in buildings and to irrigate open spaces.
- Key considerations for the Monash Structure Plan Area:
 - » Industrial or commercial uses may be attracted to the Monash Structure Plan Area if an alternative water source is available.
 - » An IWM Plan for the Structure Plan Area should be prepared in collaboration with IWM Forum members that identifies IWM and associated Water Sensitive Urban Design interventions, blue-green corridors, and local flooding solutions to address land use limitations and manage water as a strategic resource in a sustainable manner.
 - » The IWM Plan should be prepared with Monash City Council or Monash University as the owner and manager of public open space and local

drainage assets to determine where IWM solutions including stormwater management solutions are viable.

- » This Structure Plan response should be delivered alongside the SRL East Structure Plan - Flooding Technical Report, the SRL East Structure Plan - Integrated Water Management Strategy, the SRL East Structure Plan - Transport Technical Report, the SRL East Structure Plan - Open Space Technical Report, and the SRL East Structure Plan - Utilities Servicing Technical Report

Recommendation 2B – Alternative water supply

Planning Scheme response



Description

A Planning Scheme Amendment is recommended to require new development to incorporate available or planned alternative water supply by providing third-pipe plumbing in the development to service:

- All toilets and washing machines
- Landscaped areas.

Impact

- This Planning Scheme response could generate benefits including:
 - » Reduce potable water demand for approved uses (toilets, washing machines and irrigation) to reduce pressure on drinking water supply – in some recent developments in Melbourne’s north-east, the use of recycling water is aiming to reduce potable water consumption 45 per cent (Development Victoria 2023)
 - » Reduce cost of water for Structure Plan Area customers as non-potable water is cheaper to purchase than potable water
 - » Support additional water for irrigation of open space, landscaped areas, and streetscapes, delivering on urban cooling and biodiversity, ecological and urban greening initiatives
- Increase resilience of Structure Plan Area to a warmer and drier climate, and support for Victorian-wide policy objectives.

Implementation considerations

- The Planning Scheme Amendment should consider application to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating.
 - » Under this approach, development will be required to achieve Credit 25 (Water Use) which requires, for credit achievement, that the building has

infrastructure for recycled water in a district or location where local council or water authorities (or similar) have planned for installation of recycled water infrastructure.

- » For smaller developments below these thresholds, implementation could be considered through an Sustainable Management Plan (SMP) as required by the municipal planning scheme. The SMP could include a minimum requirement that ensures the third-pipe (to use alternative water) plumbing and any associated infrastructure and fixtures are included in the development.
- Precedent can be found in:
 - » The Arden Climate Response Plan planning controls, which set out IWM standards for new developments to meet, including connection to any third-pipe and stormwater management system
 - » Fishermans Bend Framework Strategy 5.2.1, which supports the delivery of a water recycling plant and associated third-pipe infrastructure to provide recycled water as a substitute for potable water for toilet flushing, laundry and irrigation.
- Potential barriers to uptake for this planning scheme response include:
 - » Collaboration with water authorities and retailers on the viability and cost-effectiveness of an alternative water system will be required to provide an alternative water supply to development in the Structure Plan Area at an appropriate time.
 - » South East Water (water retailer) may require sites in the Monash Structure Plan Area for local pump stations and treatment plants.
- A number of initiatives and incentives are underway that would support the adoption of an alternative water supply including:
 - » Recycled water connections for households, open spaces, sports fields, and businesses (e.g. golf courses) have been implemented by South-East Water in outer south-east Melbourne, including Cranbourne, Clyde, Lyndhurst, Pakenham and Officer.
 - » The commercial viability of requiring development to provide third-pipe plumbing supported by an alternative water supply has been greatly accepted in recent structure planning in Melbourne (Fishermans Bend, Arden, and growth areas) as an acceptable use in residential developments for toilets, laundry and irrigation.
- Administrative considerations – discretions and exemptions may need to be considered by the responsible authority where it is demonstrated an alternative water supply is unavailable or inaccessible.

- This Planning Scheme response could be delivered alongside Recommendation 1B (Private development sustainability certification), as well as the SRL East Structure Plan - Integrated Water Management Strategy, and the SRL East Structure Plan - Utilities Servicing Report.

Opportunity 2C – Partnerships to support integrated water supply

Other opportunities



Description

- There is opportunity to use the existing IWM Forum members to prepare IWM Plans for the Structure Plan Area.

Impact

- This opportunity could generate benefits including:
 - » Translate catchment priorities into specific initiatives that respond to the forecast development, and help to manage existing IWM challenges
 - » Unlock co-investment from parties on delivery of IWM solutions
 - » Support early and upfront IWM asset ownership agreements
 - » Create opportunities for multipurpose land uses, such as co-located drainage infrastructure with recreational facilities, open space, and walking or cycling routes.

Implementation considerations

- This opportunity should support delivery of Recommendation 2A.
- IWM planning takes time with many stakeholders interested in water management outcomes. The IWM forums are responsible for delivering IWM actions for all water-related outcomes across Melbourne. However, more analysis and engagement with potential partners may be required to identify the most appropriate partnership model and appropriate staging of IWM solutions.
- Engagement with large land owners (Monash University) on their IWM objectives will also be required. Monash University's Clayton campus has implemented significant water efficiency and IWM measures, including rainwater harvesting to support toilet flushing and grounds irrigation (Monash University 2023). As a major tenant in the Monash Structure Plan Area, there is opportunity to leverage learnings and results from this approach.
- Monash University is home to the Monash Sustainability Development Institute which supports Water Sensitive Cities Australia (WCSA). This research aims to generate new knowledge on water system transformation, evolve water sensitive products and build industry capabilities. There may be

opportunity to integrate the WCSA research into supporting improved IWM outcomes in the Monash Structure Plan Area and across the SRL.

5.3 Circular economy and sustainable procurement

A circular economy approach aims to reduce or avoid waste by keeping resources in use for as long as possible by reusing, repairing, sharing, refurbishing and recycling them. It involves a mindset shift from waste as a ‘problem’ to resources that have continued value and productive use.

Resource flows in a circular economy are shown in Figure 5.2.

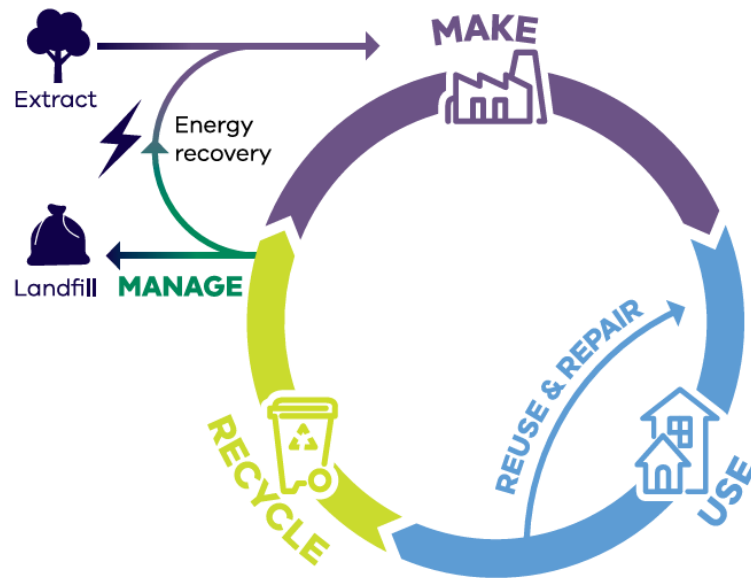


FIGURE 5.2 RESOURCE FLOWS IN A CIRCULAR ECONOMY (VICTORIAN GOVERNMENT 2020)

The Victorian Government’s circular economy policy and action plan, Recycling Victoria: A new economy (2020) supports these outcomes.

⁸ Recycling rates represent 2023 recycling rates for City of Monash. Note this figure is indicative only and is not based on precinct resource modelling for Monash Precinct (Source: Recycling Victoria, 2023).

Victoria has committed to an overhaul of its recycling system, with reform to kerbside recycling, the introduction of a container deposit scheme, new investment in industry, and the creation of waste management as an essential service. Recycling Victoria sets ambitious targets to:

- Divert 80 per cent of waste from landfill by 2030
- Cut total waste generation 15 per cent per capita by 2030
- Halve the volume of organic materials going to landfill between 2020 and 2030 (with an interim target of 20 per cent reduction by 2025)
- Ensure every household has access to food and organised waste recycling or local composting by 2030.

What’s the challenge in the Monash Structure Plan Area?

Circular economy and waste challenges

Current recycling rates in the Monash Structure Plan Area are around 49 per cent,⁸ meaning the other 51 per cent of resources goes to landfill. While there is no specific data on construction and demolition (C&D) waste for the Structure Plan Area, C&D waste represents the majority of Victoria’s waste – 7.7 Mt of waste generated in 2022 was from C&D activities from a total of 15.82 Mt, with around 15 per cent of C&D waste going to landfill (Recycling Victoria 2023).

In Australia, 228 kilograms of CO₂-e are produced per square metre (squared metres) of floor space in a residential building during construction. For non-residential buildings, this rises to 433 kilograms CO₂-e/squared metres, generally due to larger buildings requiring more substantial foundations and structures (ThinkStep 2021).

Under a Future Business as Usual State, the rapid development commercial and residential areas of the Structure Plan Area, increasing population growth, and the significant amounts of materials required to construct new infrastructure will lead to:

- Increased construction and demolition waste which is expected to rise in Victoria to 29.4 Mt by 2050, an increase of nearly 300 per cent (Recycling Victoria 2023)
- Issues with material availability and rising embodied carbon, with virgin materials contributing to as much as 85 per cent of a building's total carbon emissions by 2050 (ThinkStep 2021)
- Significant increase in waste generation per person, which may rise by around 87 per cent by 2051 in the Structure Plan Area, including a 130 per cent increase in organic waste (Recycling Victoria 2023).

Policy and planning challenges

- The circular economy is strongly considered in Victorian Government policy with ambitious state-wide circular economy targets to be achieved by 2030.
- Victorian Government policy is reinforced through:
 - » Plan Melbourne 2017-2050 (2017b), which sets directions to transition to a low carbon city, reduce waste and improve waste management and resource recovery
 - » Local government policies for Monash Structure, which set targets to divert waste from landfill, strengthen sustainable procurement and facilitate circular economy outcomes throughout community incentives.
- These policies have limited implementation in the Monash Planning Scheme. There are no requirements for construction waste reduction performance (such as C&D waste diversion targets). There are minimal requirements or targets to manage operational waste across residential, commercial and industrial development.
- Clause 22.13 of the Monash Planning Scheme encourages development to promote waste avoidance and reuse in all stages of development, and adopt durable and reusable materials. However, the planning scheme does not set minimum requirements for material choice or the reduction of embodied carbon in new developments. This topic is also not

addressed under the Built Environment Sustainability Scorecard (BESS).

- Appendix A summarises the strategies and policies reviewed to inform this Climate Response Plan.

Future challenges

There are significant gaps to be addressed to align policy direction, the planning system and built environment performance outcomes. If not adequately planned for, increased development in the Monash Structure Plan Area combined with more jobs, people and dwellings will contribute to more waste going to landfill, reduced availability of virgin materials, increased pollution and rising greenhouse gas emissions exacerbating climate change.

Continuing a linear economy approach of 'take, use and throw away' will risk achievement of the Victorian Government circular economy and net zero targets, and fail to deliver opportunities for innovation and productivity with more efficient resource use.

Desired outcomes in the Monash Structure Plan Area

To achieve the Monash Vision, infrastructure, buildings and places being designed now should support a circular economy by enabling more productive use of natural resources, avoiding waste through good design, and ensuring that infrastructure is durable and adaptive to future changes in resource use.

Embedding circular economy principles into the Monash Structure Plan should support zero waste outcomes in design, construction and the operation of new developments.

Neighbourhoods could be more liveable, durable, resilient and sustainable, and achieve circular economy policy targets. This could support the following outcomes:

- **Reduced embodied carbon** – the built environment adopts non-virgin, lower carbon materials contributing to the achievement of Victoria's net zero emission targets

- **A more circular Structure Plan Area** – keeping resources in productive use for as long as possible by encouraging reuse, recycling and reducing construction, demolition and operational waste sent to landfill
- **Durable, resilient and adaptive infrastructure** – which requires less maintenance and is designed to be disassembled or adapted, avoiding future demolition waste and emissions and encouraging a continued circular approach to material use
- **Reduced waste generation per person and for businesses** – by encouraging opportunities for resource recovery.

Recommendations and other opportunities

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for circular economy – aiming to close the gap between the circular economy challenges facing the Monash Structure Plan Area and the desired outcomes.

- **Recommendation 3A** – Supporting a circular economy (Structure Plan response)
- **Recommendation 3B** – Embodied carbon reduction in new developments (Planning Scheme response)
- **Recommendation 3C** – Construction and operational waste management targets (Planning Scheme response)
- **Opportunity 3D** – Partnerships to support a circular economy (Other opportunities).

Recommendation 3A – Supporting a circular economy Area

Structure Plan response



Description

A Structure Plan response is recommended to facilitate a circular economy in the Structure Plan Area by encouraging all public and private development to adopt leading waste and resource recovery practices to achieve 80 per cent diversion in waste from landfill, reduce the amount of waste produced 15 per cent, and reduce embodied carbon from materials.

It is also recommended the response encourages existing developments to support the Structure Plan response where possible.

Impact

- This Structure Plan response could generate benefits including:
 - » Encourage the design, construction and operation of all new development to consider opportunities to reduce embodied carbon from virgin materials and maximise resource recovery from the early planning stages
 - » Support the aims and targets of the Victorian Government circular economy and net zero policy and targets
 - » Further encourage businesses, jobs or enterprises to support more efficient resource use, resources sharing or resource recovery, building on the existing resource recovery industry in the Structure Plan Area
 - » Support residents and employees in the Structure Plan Area to further understand their role in supporting circular economy outcomes.

Implementation considerations

- This response is recommended to be supported by Recommendations 3B, 3C and 3D.
- Potential strategies to support a circular economy for developments in the Structure Plan Area may include:
 - » Requiring developments to:

- Avoid waste by designing out materials, using fewer materials or more durable materials that require less maintenance, and can be reused or recycled in the future
- Adopt reused, low carbon or recycled materials in design where possible
- Design for future waste streams by allowing appropriate sizing and space
- Manage all waste at the source (such as through on-site organic waste management, or off-site recycling facilities).
- » Requiring capital works to:
 - Reduce embodied carbon at least 10 per cent and minimise the use of virgin materials by adopting recycled or reused materials
 - Adopt materials which are considered to be more durable than standard materials or reduce the maintenance requirements of the works
 - Use materials that can be composted, recycled or reused at the end of their life
 - Introducing innovative education and engagement programs for residents, businesses and the construction sector which leverage existing resource recovery opportunities.
- Precedent can be found in:
 - » Fishermans Bend Framework Objectives 8.1 and 8.3, which encourage leading-practice waste and resource recovery management in buildings and maximum value to be extracted from waste
 - » Arden Structure Plan Objective 13 which aims to minimise waste production, optimise reuse and recycling and encourage a circular economy.
- Key considerations for the Monash Structure Plan Area:
 - » The Monash Structure Plan Area is already home to a range of knowledge and innovation related to the circular economy. For example, Monash University has applied research in circular economy for textiles and food waste and the CSIRO has led the development of ASPIRE, an online marketplace to match businesses with potential remanufacturers, purchasers or recyclers.
 - » There are opportunities for the growth of the Structure Plan Area to strengthen the research and science on the circular economy – including

- opportunities for developing new materials or resource recovery solutions – which would have benefits in the Monash Structure Plan Area and across SRL.
- » Existing industrial areas or growth in new industrial areas may be able to support future resource recovery needs. Alternatively, existing industrial facilities may be reused or adapted for alternative commercial uses.
- » The Monash Structure Plan Area is located near existing waste management services, such as a waste transfer station, which may need to be relocated. There may be opportunities to ensure the Structure Plan supports reduction in waste generation, wherever possible, to facilitate improvements for the transfer station.
- » Guidance to support circular economy and waste management outcomes in new development could be sourced from the Victorian Government's circular economy policy and plan, Recycling Victoria: a new economy (2020), Sustainability Victoria or other emerging government policy and guidance.
- » This Structure Plan response should be delivered alongside the *SRL East Structure Plan - Transport Technical Report - Monash*.

Recommendation 3B – Embodied carbon reduction in new developments

Planning Scheme response



Description

- A Planning Scheme Amendment is recommended to encourage all new development to:
 - » Reduce embodied carbon at least 20 per cent (compared to those of a reference building)
 - » Minimise the use of virgin materials used by adopting recycled or reused materials
 - » Adopt materials which are considered to be more durable than standard materials or reduce the maintenance requirements of the development
 - » Use materials that can be composted, recycled or reused at the end of their life.

Impact

- This Planning Scheme response could generate benefits including:
 - » Reduced greenhouse gas emissions in the Structure Plan Area by using materials with lower embodied carbon such as recycled or reused materials in new residential and commercial buildings. Materials could include:
 - Concrete – for a 40 MPa concrete used in a commercial building slab with 30 per cent supplementary cementitious materials (SCM) results in 50 kilograms CO₂/t less embodied carbon than standard concrete (CEFC 2021)
 - Recycled steel – every tonne of scrap used for steel production avoids the emission of 1.5 tonnes of CO₂ (AHURi 2023)
 - Timber use instead of other materials – using 17 per cent timber in construction as an alternative to brick, aluminium, steel and concrete can reduce greenhouse gas emissions by about 20 per cent in a standard building (AHURi 2023).

Implementation considerations

- The Planning Scheme Amendment is recommended to apply to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating. Under this approach, development will be required to achieve Credit 21 (Upfront Carbon Emissions) which requires, at a minimum, buildings demonstrate reduction of embodied carbon by at least 10 per cent (rising to a minimum 20 per cent reduction for projects from 2026 onwards).
 - » For smaller developments below these thresholds, implementation could be considered through a Sustainable Management Plan (SMP) where developers would respond to a checklist of requirements to demonstrate how they have met the planning control.
- Precedent can be found in:
 - » City of Melbourne Amendment C376 (2023) and Fishermans Bend Precinct planning controls, where developments above 5000 squared metres require a 5 Star Green Star Buildings rating. This contains a minimum requirement that the building's upfront carbon emissions are at least 20 per cent less than those of a reference building
 - » Arden Precinct planning controls promote the achievement of a 6 Star Green Star rating.
- Potential barriers to uptake for this Planning Scheme response include:
 - » There may be cost increases to developers in adopting recycled or low carbon materials, depending on the scale of development and building application (such as structural vs non-structural). For example, potential cost premiums on recycled materials – the capital cost premium of concrete with supplementary cementitious materials is approximately \$10/m³ (Frontier Economics 2022). However, this may be offset with smart design (using fewer materials) or if existing materials are reused on site.
 - » There is currently a modest market for the reuse of construction and demolition waste materials. In addition, the accelerated growth and rapid development of the Structure Plan Area may place increased demand on recycled materials or low carbon material supply chains, impacting availability and supply of recycled or reused materials.

- A number of initiatives and incentives are underway that would support the adoption of recycled, reused and low carbon materials including:
 - » Sustainability Victoria, Ecologiq and other Australian and Victorian government agencies are supporting the development of new recycled and reused material supply chains and consolidated databases of products available
 - » Environmental Product Declarations (EPDs), which communicate the lifecycle performance of verified products and services, including embodied carbon, are publicly available via EPD Australasia, including for construction products such as aggregates, concrete, asphalt, cladding and façade, and floor systems
 - » Material passports are an evolving concept being adopted by large development and construction companies such as Multiplex, and being investigated by Victorian Government agencies such as Ecologiq. These are electronic identity cards that detail all the components and materials of a building, providing information on material production and performance to support future reuse and recovery, and detailing the embodied carbon. Material passports aim to make it easier for developers to choose circular building materials.
- Administrative considerations – As per the above, this space is still progressing and discretions and exemptions may need to be considered by the responsible authority where it is demonstrated materials are unavailable.
- This Planning Scheme response could be delivered alongside Recommendation 1B (Private development sustainability certification).

Recommendation 3C – Construction and operational waste management targets

Planning Scheme response



Description

- A Planning Scheme Amendment is recommended to require multi-residential and non-residential development to achieve:
 - » 90 per cent diversion of C&D waste from landfill during construction
 - » 80 per cent diversion of waste from landfill during operation of the development, including:
 - Ensuring space is allocated for separation and management of four waste streams, including general waste, co-mingled recycling, glass and organics (or other waste streams considered standard at the time of implementation) and other non-standard waste (such as clothing, e-waste)
 - Appropriate waste management and collection services are in place to meet these targets.

Impact

- This Planning Scheme response could generate benefits including:
 - » Generate savings by avoiding costs of C&D and organic waste to landfill – estimates suggest the avoided cost of C&D waste to landfill (tonnes) is \$125/tonne and for organic waste is \$93/tonne (including consideration of landfill levies) (Frontier Economics 2022)
 - » Support resource recovery at the development scale by ensuring appropriate source separation – evidence indicates that appropriate source separation in commercial and residential develop could supports resource recovery of up to 92 per cent (Infrastructure Victoria 2020)
 - » Enable waste-related emissions to be avoided and/or reduced by diverting waste from landfill
 - » Support a circular economy by recycling, reusing or repurposing potentially scarce or stretched resources.

Implementation considerations

- The Planning Scheme response is recommended to apply to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating. Under this approach, development will be required to achieve: Credit 2 (Responsible Construction) which requires, at a minimum, buildings to recycle 80 per cent of construction and demolition waste; and Credit 4 (Operational Waste) where buildings must have appropriate spaces for waste management and an appropriately sized loading dock.
 - » For smaller developments below these thresholds, implementation could be considered through the existing Waste Management Plan required under the Built Environment Sustainability Scorecard (BESS) which currently supports on-site reuse of organic waste. This Planning Scheme response could expand the scope of the Waste Management Plan to include construction and demolition waste during construction, and hard-to-manage waste during operation.
- Precedent can be found in:
 - » Fishermans Bend Planning Controls, which aim to include requirements for on-site waste separation (Strategy 1.7.1) and deliver leading practice waste and resource recovery management within buildings (Objective 8.1)
 - » City of Melbourne Planning Scheme, which requires developments to produce a Waste Management Plan that meets the requirements of the City of Melbourne's Guidelines for Waste Management Plans or a precinct waste management plan (if there is one in place). The guidelines response to the City of Melbourne's target to divert 90 per cent of waste from landfill by 2030.
- Potential barriers to uptake for this Planning Scheme response could include:
 - » For operational waste – implication of spacing requirements (particularly for organic waste on-site management) has not been measured, although this could be done in accordance with Sustainability Victoria's Waste Management and Recycling in Multi-unit Developments Better Practice Guide (2019). If considered early in planning stages, the capital cost for developers is potentially negligible as waste storage areas are required under business-as-usual planning processes.
 - » For operational waste – may create implications or cost to building owners to manage 'hard to manage' waste that is not currently part of existing council hard waste or e-waste collection schemes.
- There may be opportunity to support the uptake of this Planning Scheme response through:
 - » Coordination of commercial and/or industrial collection contracts to avoid individual contracts across development, provision of a centralised location for waste management and ensuring bulk waste collections. Streamlining waste management may help to address the significant rise in organic waste expected in the Structure Plan Area in the coming decades as a single contractor could be used. This would be particularly prevalent for areas such as the Employment Growth neighbourhood, industrial areas or development around the SRL station. If considered, this would be delivered alongside the SRL East Structure Plan - Transport Technical Report - Monash (kerbside waste management).
- Administrative considerations – achievement of waste diversion rates may depend on available and appropriate processing resource recovery infrastructure to manage the waste streams and volumes within each specific development.
- This Planning Scheme response should be delivered alongside the SRL East Structure Plan - Transport Technical Report - Monash.

Opportunity 3D – Partnerships to support a circular economy

Other opportunities



Description

There is an opportunity to establish partnerships between Victorian Government agencies (such as Sustainability Victoria), local government, and research tenant organisations (CSIRO, Monash University) to deliver targeted investment in circular economy opportunities in the Monash Structure Plan Area. This could include:

- Opportunities to deliver community-scale resource recovery hubs such as community-driven recycling hubs, sites for local exchanges, or repair cafes
- Opportunities for small-scale resource recovery (such as bioenergy opportunities infrastructure or development of a recycling solution for specific materials)
- Opportunities to connect local industry producers of waste with local recyclers.

Impact

- This Opportunity could generate benefits including:
 - » Access to additional project finance – a significant number of Victorian Government initiatives are underway to support local investment in circular economy outcomes (such as through Sustainability Victoria's Circular Economy Innovation Fund)
 - » Help to source appropriate investment opportunities through strategic partnerships to meet the circular economy and resource recovery needs specific to the Structure Plan Area
 - » Support targeted investment in resource recovery solutions (such as community resource hubs)
 - » Increase access to research and innovation (such as the role of artificial intelligence (AI) to accelerate circular economy solutions and outcomes)
 - » Access understanding of industry lessons learnt to deliver circular economy solutions.

Implementation considerations

- As per Recommendation 3A, the Monash Structure Plan Area is already home to a range of knowledge and innovation related to circular economy. For example, both CSIRO and Monash University have applied research in circular economy for textiles and food waste and the CSIRO has led the development of ASPIRE, an online marketplace to match businesses with potential remanufacturers, purchasers or recyclers. There are opportunities for the growth of the Structure Plan Area to strengthen the research and science on circular economy – including opportunities for developing new materials or recovery solutions – which would have benefits in the Monash Structure Plan Area and across SRL.
- Opportunities identified through partnerships should align to Victoria-wide waste and circular economy infrastructure priorities (including the Statewide Waste and Resource Recovery Infrastructure Plan Sustainability Victoria 2018) and its future iterations, such as the Victorian Recycling Infrastructure Plan).
- Opportunities for small-scale resource recovery would require an analysis of the Structure Plan Area context and would need to be undertaken in line with partnerships to support net zero outcomes.
- Local government (Monash City Council) has led a Circular Economy Leadership Development Program collaborating with 12 other Victorian councils to embed circularity into policy and build a network of circular leaders. This would provide a strong foundation to any partnership across local government.
- A range of stakeholders (government, not-for-profit) could play a role in operating resource hubs. For example, not-for-profit organisations or local government may support repair cafes.

5.4 Place-based measures to promote zero emissions transport

The SRL East Structure Plan - Transport Technical Report - Monash outlines a holistic blueprint for the Monash Structure Plan Area on how the transport network will maximise opportunities in surface transport infrastructure, including zero-emissions transport solutions such as active transport, electric vehicles and mobility solutions.

This Climate Response Plan supports and reinforces the recommendations made in the SRL East Structure Plan - Transport Technical Report - Monash to ensure emissions from transport are reduced in the Monash Structure Plan Area and that opportunities consider the local context. These recommendations should be considered as statutory tools to guide land use and development outcomes in the Structure Plan Area and non-statutory tools that may involve strategic partnerships with local government and other key stakeholders. These recommendations include:

- Upgrades to support priority for walking, cycling and public transport trips in the Monash Structure Plan Area and reduce private vehicle use
- Adopt an integrated management approach to car parking in the Structure Plan Area, including seeking maximum parking rates for residential and non-residential development and consider parking provisions for zero emission and car share vehicles
- Delivery of a central mobility hub and supporting hubs in the Structure Plan Area
- Ensuring that all new development supports active transport in the built environment through recommendations for end of trip facilities or cycle parking, car parking reduction and other innovative approaches (car share schemes, micro-mobility)
- Partnerships with Monash City Council, potential operators and other key stakeholders (e.g., Monash University) on trials and delivery of low and zero-emissions transport initiatives, including micro-mobility solutions and innovative car parking approaches.

5.5 Climate change adaptation

By the time SRL is delivered, Melbourne's climate will be significantly changed. Victorian Government projections indicate that if global greenhouse gas emissions continue rising at high rates, by 2050 the Structure Plan Area could experience the following changes in climate (Department of Environment, Land, Water and Planning 2022):

- Warmer average temperatures - maximum daily temperatures could increase by around 1.8 degrees Celsius
- More heatwaves and extreme heat days – days over 35 degrees Celsius could double from around 5 days per year to around 13 days per year.
- Long-term drying trend – rainfall will be highly variable but there is projected to be a long-term decline in cool season rainfall and snow, with a possible 8.9 per cent decrease in annual rainfall.
- More extreme rainfall events – extreme daily rainfall to be highly variable with significant increases and decreases both possible. A 1-in-20 year extreme rainfall event could see 92 millimetres of rainfall.
- More dangerous fire weather – for greater Melbourne, the number of days where the Forest Fire Danger Index exceeds the 95th percentile could increase by 42 % (Department of Environment, Land, Water and Planning 2015).

While exposure to climate risks depends on how quickly and aggressively emissions are cut, some impacts from climate change will be unavoidable. This means that how the Structure Plan Area is designed today needs to factor in future climate change.

Climate change adaptation focuses on preparing the Structure Plan Area for the effects of climate change in order to reduce current and future risks, build social and economic resilience, and protect community wellbeing (Department of Environment, Land, Water and Planning 2022). Climate hazards can be categorised into 'shocks' and 'stresses', which can have a range of direct and indirect impacts. For example:

- Climate shocks are sudden, extreme weather events such as flash flooding, storms or extreme heatwaves that cause damage to buildings,

homes and infrastructure. This may cause disruption to services, business operations, construction activity and movement within the Structure Plan Area.

- **Climate stresses** are typically longer-term, ongoing and emerging changes such as reduced annual rainfall. This may cause vegetation loss over time which then increases pressure on local biodiversity and reduces the amenity and community usage of gardens, sporting fields, and other green spaces).

What's the challenge in the Monash Structure Plan Area?

The built environment of the Monash Structure Plan Area is already exposed to the impacts of climate change. There are 1-in-100-year flood events near local waterways in the south of the Structure Plan Area. There are urban heat pockets in areas with limited open space as well as at commercial areas, such as between Clayton Road and Gardiner Road and between Ferntree Gully Road and Hilltop Avenue.

Key challenges include:

- Warmer temperatures and reduced rainfall lead to increased risk of extreme heatwaves, bushfires, droughts and flooding poses risks to buildings, infrastructure, services and community wellbeing (Monash City Council 2016).
- Increasing urban density is causing the loss of vegetation on private land, exacerbating climate change risks such as heatwaves and flooding
- Taller mixed-use developments and higher-density apartments are planned for the Structure Plan Area, bringing more people into the area
- Existing developments and infrastructure may not be resilient enough to the changing climate and extreme weather events.

How the Structure Plan Area develops will affect the community's resilience to the physical and transitional risks associated with climate change, now and in future. Without place-based climate adaptation measures, impacts from climate hazards may be exacerbated by SRL. High-density development often increases the amount of heat-absorbing materials in

neighbourhoods and could make the Structure Plan Area uncomfortably hot during warm periods. There is also a risk of localised flooding due to increased runoff from a greater area of impermeable surfaces. This may also increase the risk of economic losses and stranded assets for new development.

Policy and planning challenges

Appendix A summarises planning policies and other documents reviewed to inform this Climate Response Plan. Findings include:

- The Victorian Government supports strong action to plan for climate risks across all sectors of the economy, which has been legislated under the *Climate Change Act 2017* (Vic). Under the Act, climate change adaptation plans for key sectors of the economy must be delivered every 5 years.
- Victoria's Built Environment Climate Change Adaptation Action Plan 2022–2026 (2022b) aims to ensure the built environment is fully adapted to climate change by 2051. This supports action to strengthen planning standards, neighbourhood design and infrastructure to avoid siting development in high-risk locations and to adopt measures that enhance climate resilience (such as through urban cooling and greening).
- While climate change adaptation policy is robust, more action is required to integrate policy actions into the planning system. For example, climate risk is a consideration for planning of settlements, structure planning, and infrastructure development applications (Clauses 11.01-1S; 13.01-1S; 11.02-2S; 19), development is not required to demonstrate how adaptive measures have been incorporated into design and operations to reduce vulnerability to climate risks.
- Monash City Council has committed to support community preparedness for the likely impacts of climate change. However, climate change adaptation policies are not included in the Monash Planning Scheme. This means there is a gap in managing climate change risks in the private realm.
- The Monash Planning Scheme requires stronger provisions to address climate change risks in the private and public realm. This could take the

form of a requirement to mitigate the impacts of extreme weather events on building access, power supply or other internal infrastructure, or to consider the degradation of building assets as temperatures rise.

- The Building Environment Sustainability Scorecard (BESS) addresses thermal comfort and stormwater management but it does not require other site-specific climate change risks to be addressed.
- The National Construction Code (NCC) 2022 provides minimum performance standards for homes developed in areas subject to flooding, bushfires and cyclones, but does not account for site-specific climate variables or changing climate conditions.

Desired outcomes in the Monash Structure Plan Area

To achieve the Monash Vision, the Monash Structure Plan Area should be resilient to short-term acute climate shocks (such as heatwaves, flooding) and longer-term, chronic climate changes (such as increasing maximum temperatures, decreased annual rainfall).

Dedicated measures can ensure that new developments consider localised climate risks and that adaptation measures are bespoke to the development, including impacts of extreme weather events.

Climate change adaptation measures will be crucial for addressing the challenges of projected climate change impacts across the Structure Plan Area and could deliver benefits and outcomes including:

- **Reduced exposure to climate change risks** – new development within the Structure Plan Area is planned and sited to avoid climate risks where possible.
- **Enhanced resilience and durability** – development within the Structure Plan Area is designed to be resilient and adaptable to climate change hazards, contributing to safety and wellbeing of the community.
- **Improved adaptive capacity** – the built environment is operated to be capable of managing climate risks and implement adaptation measures for the full life cycle as required (such as retrofitting existing buildings and preparing emergency response and recovery plans).

- **Provision of co-benefits** – place-based climate change adaptation measures are designed to deliver co-benefits (such as landscaping measures which manage rainfall extremes while improving biodiversity).

Recommendations and other opportunities

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for climate change adaptation – aiming to close the gap between the adaptation challenges facing the Monash Structure Plan Area and the desired outcomes:

- **Recommendation 5A** – Climate change adaptation (Structure Plan response)
- **Recommendation 5B** – Climate change risk management standards (Planning Scheme response)

Recommendation 5A – Climate change adaptation

Structure Plan response



Description

A Structure Plan Response is recommended to support the design and construction of public and private developments, capital works and infrastructure to be resilient and adapted to climate change impacts.

Impacts

- This Structure Plan Response could generate benefits including:
 - » Reinforce climate change adaptation as a critical issue for the Structure Plan Area and promote stronger climate change adaptation measures in new developments
 - » Improve the adaptive capacity of the built environment in the Structure Plan Area to short-term climate risks (such as flash flooding, extreme heat days) and longer-term climate risks (such as drought, increased average maximum temperatures, sea level rise)
 - » Enhance resilience and durability of the Structure Plan Area by reinforcing the Victorian Planning and Environment Act 1987 (Vic) requirement for climate change to be factored into decision-making about future land use planning
 - » Promote consideration and uptake of climate change adaptation in the design and construction of new development, particularly those which provide co-benefits (such as landscaping measures which aid stormwater management, and support biodiversity).

Implementation considerations

- This response is recommended to be supported by Recommendations 5B.
- Potential strategies to support a climate change adaptation in the Structure Plan Area include:
 - » Ensure all new infrastructure incorporates climate change adaptation measures to improve resilience to climate hazards expected during their design life

- Design drainage system to have capacity for an uplift in extreme rainfall events due to climate change to reduce the likelihood of flooding due to surcharge of drainage systems.
- Apply passive design principles to mitigate heat gain, avoid accelerated degradation of materials, and support user comfort.
- Design foundations to accommodate enhanced shrink/swell of soils during drought periods.
- Select materials and finishes to increase durability to hotter temperatures (such as using more durable binders in pavement).
- » Encourage and facilitate existing buildings and infrastructure to be retrofitted to improve resilience to climate hazards expected during their design life. This may include measures such as:
 - HVAC system upgrades to accommodate future temperature rises and more frequent extreme heat events.
 - Update landscaping to include water sensitive urban design in verges and rainwater capture to promote passive irrigation towards garden beds and reduce the likelihood of heat stress to plants (and costs to replace/repair landscaped areas).
- Precedent can be found in:
 - » Arden Structure Plan Objective 7 – Encourage buildings to remain adaptable as uses change over time; Objective 27 – Ensure that early activation and place-shaping activities are delivered alongside early precinct development and in readiness for the station opening, and that long-term planning, development and service delivery are considered early in the life of the precinct to create a distinct sense of place, promote a vibrant and interesting early local experience and ensure the long-term resilience of the precinct (including adaptation to climate change).
 - » Fishermans Bend Framework Goal 4 – ‘A climate resilient community’ sets a target that the community is resilient to the shocks and stresses of climate change. This goal is supported by four objectives to reduce the urban heat island effect, embed green infrastructure into the design of public spaces and buildings, develop better community understanding of climate risks and deliver 50 per cent urban canopy coverage in public spaces by 2050. Objective 5.1 – Design the urban form to accommodate sea level rise and storm events, also supports a climate resilient community.
- Key considerations for the Monash Structure Plan Area:
 - » The Monash Structure Plan Area is vulnerable to flooding in some areas, such as at Monash University’s Clayton campus and Duerdin Street. With climate change expected to increase the frequency and intensity of flooding, new developments should be designed and delivered to be resilient to future flood events to avoid challenges and costs associated with retrofitting adaptation measures. This is also critical given the density of Monash’s residential and non-residential development is expected to increase., Measures to retain existing adaptive features, such as greenery, will be even more critical. This proactive approach should also be applied to other climate risks, such as extreme heat days and the long-term increase in average temperatures and decrease in annual rainfall.
 - » Exposure to climate hazards may not always be avoidable through siting measures. In these instances, there may be cost uplifts involved to deliver climate resilient outcomes for land use planning and/or development. Mechanisms to address issues of commercial viability and/or technical feasibility of climate change adaptation measures should be considered to support uptake.
 - » Climate change adaptation measures through structural planning should consider short-term, sudden events (that is, storms and extreme heat events) as well as long-term, gradual changes (drought, average temperature increases).

Recommendation 5B – Climate change risk management standards

Planning Scheme response



Description

A Planning Scheme Amendment is recommended to require new development to consider climate change risks and incorporate adaptation measures.

Impact

- This Planning Scheme response could generate benefits including:
 - » Ensure new development considers measures to embed resilience into a the design and operations of a building
 - » Identify multiple and overlapping climate risks and hazards that may occur over time and develop adaptation measures to reduce vulnerability
 - » Significantly extend the lifespan of buildings and reduce the risk of loss and harm from climate-related hazards, leading to improvements in health and wellbeing of building occupants
 - » Safeguarding investment: Lower operating and maintenance costs by reducing the risk of deteriorating design life or asset capacity. A \$1 investment to reduce risks associated with climate hazards or natural hazards has been estimated to save \$2 to \$11 in post-disaster recovery and reconstruction costs (CSIRO 2020).

Implementation considerations

- The Planning Scheme Amendment is recommended to apply to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating.
 - » Under this approach, development will be required to achieve Credit 16 (Climate Change Resilience) which requires, at a minimum, applicants demonstrate consideration of potential climate change impacts and risk treatments by completing a climate change pre-screening checklist. Credit achievement requires developing a climate change risk assessment for the project that treats extreme and high risks.

» For smaller developments below these thresholds, implementation could be considered through a Sustainable Management Plan (SMP) where developers would respond to a checklist of requirements to demonstrate how they have met the planning control.

- Precedent can be found in:
 - » The Arden Structure Plan features a strategy that requires the design of all buildings to consider future climate scenarios and exceed minimum required life expectancies and aim for at least 100 years of structural performance.
- Potential barriers to uptake of this Planning Scheme response could include:
 - » Potential cost increases for developers in undertaking a climate change risk assessment and integrating adaptation measures into building design, which may require engaging professional advice
 - » Poorly designed adaptation measures can create undesirable outcomes for other Climate Response Plan focus areas – for example, using energy-intensive HVAC systems to adapt a building to extreme heat events would work against achieving net zero objectives to improve energy efficiency and reduce emissions. To avoid this, climate change risk assessments should identify interfaces with other focus area measures.
- A number of initiatives and incentives are underway to support the adoption of climate change risk management standards including:
 - » Existing Australian Standard (AS 5334:2013 Climate change adaptation for settlements and infrastructure) provides guidance on the approach to climate change risk and adaptation assessment
 - » Green Star Buildings Credit 16 provides guidance on climate change risk and adaptation assessment and best-practice operational emergency risk management and guidance on requirements for a suitably qualified professional
 - » Adaptation measures introduced early can reduce future costs to manage climate change (Australian Government Department of Climate Change and Energy Efficiency 2013).
- Administrative considerations – discretions and exemptions may need to be considered by the responsible authority where it is demonstrated that climate change adaptation measures are not feasible.
- This Planning Scheme response could be delivered alongside Recommendation 1B (Private development sustainability certification).

5.6 Environmental enhancement and protection

Environmental enhancement and protection refers to actions and regulations aimed at safeguarding and improving the natural environment.

As urban population growth continues it will be vital to reserve space for parks and nature. Green spaces are crucial for:

- **Human wellbeing** – as cities and neighbourhoods become denser, access to green spaces becomes more critical, providing opportunities for relaxation, exercise and mental rejuvenation. Urban residents need direct, personal experiences with nature. When people have positive encounters with green spaces, they are more likely to value and advocate for their preservation. Exposure to greenery has also been linked to reduced stress, anxiety and depression.
- **Physical health** – green spaces encourage physical activity, reducing sedentary lifestyles which can be associated with urban living. Access to nature positively impacts overall health, including stress reduction and improved immune function.
- **Biodiversity and ecosystem services** – green spaces support native flora and fauna. They act as refuges for wildlife, allowing them to thrive even in urban environments. These areas also contribute to ecosystem services such as air purification, carbon sequestration and water retention and treatment.
- **Social cohesion** – green spaces serve as meeting points for communities. They can foster social interactions, community events, and a sense of belonging. Well-designed parks enhance social cohesion and create vibrant neighbourhoods and communities.
- **Climate resilience** – trees and vegetation in green spaces help mitigate the urban heat island effect, regulate temperatures, and absorb excess rainfall. As density in the Structure Plan Area increases, maintaining these natural buffers is crucial for climate resilience.

What's the challenge in the Monash Structure Plan Area?

The Monash Structure Plan Area suffers from an incremental loss of canopy cover and vegetation, primarily due to the redevelopment of residential land. A key challenge is the decrease in green and natural surfaces and an increase in urban built form which reduces the opportunities for achieving greening, particularly for additional large canopy trees.

High urban heat in the Monash Structure Plan Area is directly related to its low tree canopy cover, which is currently around 13.2 per cent (or 22 per cent of its buildable area, not including existing open space).

The current character of residential areas is for a garden setting, this will need to adapt due to the expected level of future development across the Structure Plan Area. The consolidation of lots and higher-density residential development will further reduce canopy cover and vegetation and increase the area of impervious surfaces, causing more fragmentation of habitat and habitat corridors for local fauna (despite a council target to increase canopy cover of the municipality).

The fragmentation of the Structure Plan Area's open spaces presents a challenge to improving biodiversity and green corridors. Roadways are also major impervious areas that contribute to the urban heat island effect and to air pollution.

As per City of Monash Environmental Sustainability Strategy (2016–2026):

'The loss of local biodiversity will impact on Monash's climate stability and the ability to reduce the heat build up on days of extreme heat. The loss of biodiversity will also reduce the breakdown and absorption of pollution and to filter and improve the water quality within our wetlands and waterways. When biodiversity is lost at the local level there is the potential for an imbalance to occur where weeds and pests will replace indigenous native species, or undesirable species will dominate.'

Policy and planning challenges

Appendix A summarises planning policies and other documents reviewed to inform this Climate Response Plan. Findings include:

- This Climate Response Plan aligns with Outcome 6 of Plan Melbourne (2017–2050) (2017b) to make Melbourne a sustainable and resilient city, and Direction 6.4 to make Melbourne cooler and greener
- It supports the Victorian Planning Authority’s Guidelines for Precinct Structure Planning in Victoria’s New Communities, specifically Target 13 – Potential canopy tree coverage within the public realm and open space should be a minimum of 30 per cent (excluding areas dedicated to biodiversity or native vegetation conservation)
- It aligns with Protecting Victoria’s Environment – Biodiversity 2037, and the goal ‘Victorians Value Nature’, by increasing the number of Victorians connecting with nature and enhancing biodiversity
- Greening projects in the Structure Plan Area will build on SRLA commitments to replant double the number of trees removed to construct SRL
- They will support achieving the council target of increasing the municipality’s tree canopy cover
- The Victorian Planning Provisions (Clause 56.05: Urban Landscape) set landscaping objectives for residential apartments and urban landscape objectives for public realm in subdivisions, but there is potentially a gap in requirements for the development of private development sites
- There are currently no planning controls to support the expansion of green infrastructure in the Structure Plan Area.

While environmental protection is supported in the municipal planning scheme, there are no planning controls that require environmental enhancement.

It is important to include environmental enhancement requirements in planning provisions that form part of development application assessments to limit further removal of key ecological assets

Desired outcomes in the Monash Structure Plan Area

To achieve the Monash Vision, the Monash Structure Plan should support enhancement of the environment, protect natural habitats and reduce

fragmentation of biodiversity. This could support the following outcomes in alignment with local government policy, Plan Melbourne (2017b) and the Monash Vision:

- **Increased tree canopy cover**, supporting the and Monash City Council tree canopy increase for the municipality (City of Monash Environmental Sustainability Strategy (2016 – 2026))
- **Enhanced greening** of urban areas to address heat island impacts, improve amenity and create a cool and green environment
- **Protection of natural habitats** that support biodiversity and local wildlife through initiatives such as the retention of mature trees on public and private land
- **Improving biodiversity** in green spaces and waterways
- **New and enhanced green corridors** and shadier streets to make walking and cycling easier and more enjoyable.

Recommendations and other opportunities

The most effective responses will vary across public and private land in the Monash Structure Plan Area, but all will contribute to the desired outcomes listed above.

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for environmental enhancement – aiming to close the gap between the environmental enhancement challenges facing the Structure Plan Area and the desired outcomes:

- **Recommendation 6A** – Urban greening strategy (Structure Plan response)
- **Recommendation 6B** – Green infrastructure for new developments (Planning Scheme response)
- **Opportunity 6C** – Partnership opportunities to support environmental enhancement and protection.

Recommendation 6A – Urban greening strategy

Structure Plan response



Description

A Structure Plan response is recommended to encourage a minimum 30 per cent tree canopy cover and enhanced green landscaping in the Structure Plan Area.

Impact

- This Structure Plan response could generate benefits including:
 - » Significantly improve the connectivity and health of ecosystems in the Structure Plan Area by creating and enhancing green corridors and rewilding in the public realm
 - » Enhance thermal comfort for the community in the public realm and deliver health benefits by increasing shading of transport corridors (particularly those used for active transport) with canopy cover
 - » Help to ensure that long-lived tree canopy cover in the Structure Plan Area is considered for retention
 - » Improve the provision of high-quality green open spaces that contribute to liveability in the Structure Plan Area, with greater tree canopy coverage and urban greening.
 - » Australia-based research has identified that middle-aged and older adults are significantly more likely to undertake moderate to vigorous exercise when more than 20 per cent green space is available within a 1-kilometre radius of their home (Astell-Burt et al. 2014). The impacts on heat vulnerability can be calculated.
- Support implementation of:
 - » The Victorian Planning Authority Guidelines for Precinct Structure Planning in Victoria's New Communities: Target 13 – Potential canopy tree coverage within the public realm and open space should be a minimum of 30 per cent (excluding areas dedicated to biodiversity or native vegetation conservation)
 - » Plan Melbourne (2017b): Direction 6.4 Make Melbourne Cooler and Greener, and Policy 6.4.1: The city must establish and maintain canopy trees along transport corridors, green buildings (roofs, facades and walls) and plant up open spaces—including parks, waterway corridors, school grounds and utility easements—together with the provision of a

public open space network across Melbourne and Policy 6.4.2: Better planning, design and use of new and existing public open space is critical.

- » Protecting Victoria's Environment – Biodiversity 2037: Goal: Victorians Value Nature
- » City of Monash Environmental Sustainability Strategy (2016–2026) which notes the challenge for the Monash City Council is to balance urbanisation with protecting and enhancing biodiversity and the garden city character. This means strengthening and implementing planning mechanisms to protect and enhance biodiversity and the garden city character.

Implementation considerations

- This objective is supported by the Planning Scheme Amendment in Recommendation 7B.
- Potential strategies to increase urban greening in the Structure Plan Area may include:
 - » Increase tree canopy coverage with understorey planting and greening in the following public spaces:
 - Trees and garden bed plantings, including street rights-of-way areas
 - Public transport (rail corridors) and active transport corridors (walking and cycling pathways)
 - Other public realm areas associated with linear infrastructure
 - Encourage green walls and green roofs in new developments (particularly where site setbacks are not available)
 - Explore opportunities to conserve existing areas with native vegetation in the Structure Plan Area to support habitats for native fauna
 - Create new biodiversity connections and new open space or improve existing open space that provide conservation, habitat and biodiversity functions
 - Ensure landscaping is climate-responsive, supports biodiversity, wellbeing and amenity
- Precedent can be found in:

- » Arden Structure Plan Objective 21 and Objective 22 which seek to expand and improve green open space and increase the tree canopy to achieve 40 per cent coverage in public and private realm
- » Fishermans Bend Framework Objective 4.3, which seeks to achieve 50 per cent tree canopy coverage in public spaces by 2050.
- Key considerations for the Monash Structure Plan Area:
 - » Space for trees as critical green infrastructure (including horizontal offsets, overhead clearance, passive irrigation and adequate soil volumes and root bridging) must be prioritised with equal importance with other street infrastructure including overhead and underground services, lighting, signage and urban elements
 - » Utility service providers have ownership of the utility and have final say and approval of designs, which gives them a high level of influence about their offset requirements for tree plantings
 - » Depending on the extent of existing green infrastructure on a development site, there may be an initial increase in upfront costs to developers to increase green infrastructure at a site to meet the urban greening targets
 - » Street section typologies can provide more information about placement and coverage. Where site setbacks are not available, the use of green wall and green roof solutions are encouraged. This is in line with the Building Environmental Sustainability Scorecard (BESS) framework which encourages green roofs and green walls and facades (see Appendix A).
 - » The BESS framework promotes vegetation and green infrastructure within and around private development, although it is limited in its capacity to influence tree canopy coverage and greening in the public realm.
 - » Guidelines such as Victoria’s Trees for Cooler and Greener Streetscapes: Guidelines for Streetscape Planning and Design, and Victoria’s Movement and Place Framework can provide guidance for prioritising tree planting along transport corridors.

Recommendation 6B – Green infrastructure for new developments

Planning Scheme response



Description

A Planning Scheme Amendment is recommended to require development in the Structure Plan Area to deliver environmental enhancement and protection by greening buildings, increasing canopy planting, protecting vegetation, and climate adaptive landscaping.

Impacts

- This Planning Scheme response could generate benefits including:
 - » Multiple benefits from increasing tree canopy coverage and other greening measures, including significant improvements to ambient temperatures from shading and evapotranspiration
 - » Improved urban biodiversity with green infrastructure that provides habitat, enhances habitat connectivity, and improves air quality.

Implementation considerations

- It is recommended the Planning Scheme Amendment is applied to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating.
 - » Under this approach, a development may pursue: 1) Credit 37 (Nature Connectivity) which requires development sites to encourage species connectivity, including through canopy cover, green roofs and other landscaping and 2) Credit 36 (Biodiversity Enhancement) which requires landscaping that enhances habitat provision.
 - » For smaller developments below these thresholds, implementation could be considered through an Urban Greening Compliance Report that demonstrates:
 - Urban greening targets – 30 per cent canopy and 50 per cent garden bed coverage across a development site

- Strategy to protect and retain and enhance existing site vegetation
- Demonstrate the use of an endemic and climate-adaptive landscape palette and vegetation selection
- Achievement of nature-positive outcomes (stopping biodiversity loss and restoring nature) across the development site
- Setbacks are maximised to ensure adequate space for tree canopy planting and landscaping
- Where setbacks are unable not possible, greening of building exterior (with green walls and green roofs).
- Precedent can be found in:
 - » Arden Precinct planning controls, which require 40 per cent of a site area to be green cover, including vegetation, podium landscaping, green roofs and green walls.
- A number of initiatives are underway that may support the uptake of urban greening in private development, including:
 - » City of Monash Environmental Sustainability Strategy (2016–2026) which notes the challenge for the Monash City Council is to balance urbanisation with protecting and enhancing biodiversity and the garden city character. This means strengthening and implementing planning mechanisms to protect and enhance biodiversity and the garden city character.
- Potential barriers to uptake for this Planning Scheme response include:
 - » Depending on the extent to which a development site currently includes green infrastructure (which is retained), there may be a minor initial increase in upfront costs to developers to introduce additional greening across the site to meet the identified urban greening targets
 - » Where green roofs are being considered, developers may need to consider structural implications from any associated weight loading (which may be particularly relevant for industrial development).
- Administrative considerations – discretions and exemptions may need to be considered by the responsible authority where it is demonstrated that an environmental enhancement and protection strategy is unfeasible.
- This Planning Scheme response should be delivered alongside Recommendation 1B (Private development sustainability certification), the Urban heat island strategy recommendations, and the SRL East Structure Plan - Open Space Technical Report, the SRL East Structure Plan - Ecology and Arboriculture Technical Report - Monash.

Opportunity 6C – Partnerships to support environmental enhancement and protection



Other opportunities

Description

There is opportunity for a greater collaboration and partnership approach to address barriers and realise opportunities for achieving environmental enhancement and protection in the Monash Structure Plan Area, including with Victorian Government departments (such as Parks Victoria), local governments, and major developers.

Impact

- This opportunity could generate benefits including:
 - » Greater access to resources, expertise and innovation opportunities
 - » Access to research and innovation aimed at conserving and protecting nature on Victoria's parks estate (The Nature Conservation Strategy 2021–2031)
 - » Advice from experience in managing a diverse network of parks from protected areas such as national, state and wilderness parks and nature conservation areas
 - » Access to additional project finance (green bonds, sustainable finance).

Implementation considerations

- Opportunities identified through partnerships should align to:
 - » Victoria's Trees for Cooler and Greener Streetscapes: Guidelines for Streetscape Planning and Design
 - » Plan Melbourne (2017b): Direction 6.4 Make Melbourne Cooler and Greener

5.7 Urban heat island strategy

Urbanisation disrupts the surface energy balance of an urban area. As population centres grow and develop, they modify a greater area of land and with corresponding increase in average temperature, forming urban heat islands.

As per City of Monash Environmental Sustainability Strategy (2016-2026):

“The loss of local biodiversity will impact on Monash’s climate stability and the ability to reduce the heat build up on days of extreme heat...One of the important functions of the urban forest is to provide shade and cooling. Increased canopy coverage throughout Monash will minimise the urban heat island effect and improve thermal comfort at street level for pedestrians.”

Urban heat islands typically form when vegetation is replaced with non-reflective, high mass, water resistant, impervious surfaces that absorb a high percentage of incoming solar radiation. This often causes significantly warmer temperatures in urban areas. The main cause of the urban heat island effect is the modification of land through urban development which uses materials that retain heat, such as concrete and asphalt, which have a high thermal mass as well as a high heat capacity and thermal conductivity. Darker surfaces also absorb significantly more electromagnetic radiation than light surfaces and so magnify their contribution to an area’s overall urban heat island effect.

Urban heat island mitigation measures can include:

- **Canopy cover** – trees can reflect or absorb the sun’s energy, limiting the heat absorbed by its shaded surface while providing natural cooling through evaporation. Increasing tree and vegetation cover helps reduce the heat island effect, generates health benefits and improves habitat diversity and connectivity, helping to conserve biodiversity.
- **Ground cover** – ground cover that receives enough water absorbs sunlight while providing a cooling effect through evaporation. Ground cover should aim to be passively watered to maximise the cooling

effects and minimise water demand (may require supplementary water for irrigation).

- **Surface reflectivity** – minimum Solar Reflective Index (SRI) values should be established for the Structure Plan Area to minimise the urban heat island effect from solar gain. The SRI indicates the ability of a surface (like a roof) to reject solar heat, and is the combined value of reflectivity and emittance. A standard black is zero (reflectance 0.05, emittance 0.90) and a standard white is 100 (reflectance 0.80, emittance 0.90).

What’s the challenge in the Monash Structure Plan Area?

The current urban heat island effect in the broader Monash suburb is a temperature difference of +8.6°C, driven by limited open space and low tree canopy cover.

- The highest heat hazard area for the future the Monash Structure Plan Area is in the commercial area between Clayton Road and Gardiner Road and between Ferntree Gully Road and Hilltop Avenue.
- Additional areas of high urban heat above baseline are located in a few pockets: the research institute in the south of the Structure Plan Area, an aged care centre south of Carlson Reserve, and the commercial and industrial area to the north. Aside from Carlson Reserve, no other open space areas are located close to these high heat locations.
- Taller mixed-use developments and higher-density apartments are planned for the Structure Plan Area, which may result in contributing to the urban heat island effect by creating ‘urban canyons’ that retain heat and prevent natural airflow.
- Urban heat islands in the Monash Structure Plan Area could become more widespread from climate change and increased urbanisation. As noted in Plan Melbourne (2017–2050) (2017b), ‘Urban intensification will add to the urban heat-island effect unless offsetting measures are implemented. Greening the city can provide cooling benefits and increase the community’s resilience to extreme heat events’.

Without focused efforts to mitigate urban heat island effects, outdoor comfort for people may be at risk.

Policy and planning challenges

Appendix A summarises planning policies and other documents reviewed to inform this Climate Response Plan. Findings include:

- Outcome 6 of Plan Melbourne (2017–2050) (2017b) aims to make Melbourne a sustainable and resilient city, and Direction 6.4 to make Melbourne cooler and greener
- Protecting Victoria’s Environment – Biodiversity 2037 features a goal to help ‘Victorians Value Nature’ by increasing the number of Victorians connecting with nature and enhancing biodiversity
- The Victorian Planning Provisions (56.05 Urban Landscape) set landscaping objectives for residential apartments and urban landscape objectives for public realm in subdivisions, but there is potentially a gap in requirements for the development of private development sites.
- There are currently no planning controls that require private land developers to deliver urban heat island mitigation measures in the Monash Structure Plan Area.

It is important to include provisions as part of development application assessments to limit development that may contribute to urban heat island effects.

Desired outcomes in the Monash Structure Plan Area

There is an opportunity to reduce current urban heat island impacts and implement strategies to mitigate impacts of proposed future development.

To achieve the Monash Vision, SRL East Structure Plan Areas should include people-friendly streets, high-quality open spaces, functional green spaces, and embrace the natural qualities of the neighbourhood.

Urban heat island mitigation measures will play a crucial role in addressing the challenges posed by predicted rising temperatures across the Monash Structure Plan Area and could deliver benefits including:

- **Energy savings** – urban heat island mitigation can reduce energy consumption and decrease the need for air conditioning and other cooling systems.
- **Improved air quality** – urban heat island mitigation helps improve air quality and reduce material surface temperatures, contributing to better public health and well-being (protecting the community from extreme heat with fewer heat-related illnesses and fatalities).
- **Enhanced comfort** – cooler urban environments improve community comfort and quality of life, and delivers high-quality outdoor spaces.
- **Biodiversity support** – green spaces and vegetation foster biodiversity by providing habitats for various species. Urban heat island mitigation contributes to urban ecosystems and ecological balance.

Recommendations and other opportunities

The following responses are recommended for the Monash Structure Plan to deliver a Future Accelerated State for urban heat island mitigation – aiming to close the gap between the urban heat island challenges facing the Monash Structure Plan Area and the desired outcomes:

- **Recommendation 7A** – Urban heat island mitigation (Structure Plan response)
- **Recommendation 7B** – Private development site urban heat island performance criteria (Planning Scheme response).

Recommendation 7A – Urban heat island mitigation

Structure Plan response



Description

A Structure Plan Response is recommended improve urban heat island mitigation and performance in new developments, capital works and the public realm in the Structure Plan Area.

It is recommended the Structure Plan Response encourages existing developments to support the Structure Plan response where possible.

Impact

- This Structure Plan Response could generate benefits including:
 - » Energy savings with reduced energy consumption for built form (due to reduced external heat load) and associated greenhouse gases
 - » Improved air quality
 - » Enhanced human health, wellbeing and comfort
 - » Biodiversity support by creating green spaces and habitat
 - » Improved functionality of urban design strategy, placemaking, and use of public open space through reduced social infrastructure surface temperatures
- The exact impact of the proposed surface urban heat island mitigation measure cannot be accurately quantified without microclimate modelling as the results are extremely sensitive to quantity and placement of mitigation measures.

Implementation considerations

- This response should be supported by Recommendation 7B.
- Potential strategies to mitigate urban heat island impacts in the Structure Plan Area may include:
 - » Increasing canopy cover – trees are one of the most effective providers of shading and localised cooling. Hotspots can be ameliorated by increasing vegetation and water in the landscape. In suburbs with low-

rise buildings, mature trees are particularly effective at reducing the urban heat island effect at the height of summer (City of Monash Environmental Sustainability Strategy (2016 – 2026)). Key areas for Monash where there is low tree canopy coverage include Clayton Road.

- » Increasing ground cover – grasses, shrubs and low-lying vegetation absorb sunlight while providing a cooling effect through evaporation.
- » Surface reflectivity – selecting construction materials including for capital works for their minimum Solar Reflective Index (SRI) values will help minimise the urban heat island effect from solar gain on to surfaces, including for capital works.
- Precedent can be found in:
 - » Arden Structure Plan Objective 14 which seeks to mitigate the urban heat island in the public and private realm through strategies such as: requiring 75 per cent of project site areas to use building or landscaping elements that increase solar reflectance; and requiring all new buildings to meet a standard of 40 per cent green cover as demonstrated through the City of Melbourne Green Factor tool
 - » Fishermans Bend Framework Objective 4.3 – Tree planting to deliver 50 per cent urban forest canopy cover in public spaces by 2050.
- Key considerations for the Monash Structure Plan Area:
 - » Monash City Council Environmental Sustainability Strategy (2016–2026) which notes the need for ‘protecting and enhancing the Monash Structure Plan Area’s biodiversity and garden city character, (which) will also assist in mitigating impacts from climate change and the urban heat island effect.’
 - » Irrigation requirements of existing and additional vegetation (canopy and ground cover) need to be considered. Water is vital to cooling the municipality, particularly through irrigation of green spaces
 - » Material selection must also consider heritage, character, durability or maintenance criteria.
 - » The City of Melbourne’s Green Factor Tool⁹ (or equivalent alternatives) may provide a suitable format to assess the credentials of a project’s green infrastructure and its impact on the urban heat island effect.
 - » This Structure Plan response should be delivered alongside: Environmental Enhancement and Protection recommendations; Recommendation 2A (Place-based integrated water management); and the SRL East Structure Plan - Open Space Technical Report.

⁹ Green Factor Tool: <https://www.greenfactor.com.au/>

Recommendation 7B – Private development site urban heat island performance criteria

Planning Scheme response



Description

A Planning Scheme Amendment is recommended that requires development to minimise the urban heat island effect from solar gain by meeting Minimum Solar Reflective Index (SRI) values. The Planning Scheme Amendment should include the following technical compliance criteria:

- Exposed materials across 75 per cent of the total project site (in plan view) that comprise building or landscaping elements to achieve the following SRI values:
 - » SRI>34 for unshaded hardstand surfaces
 - » SRI>64 for roofing material.

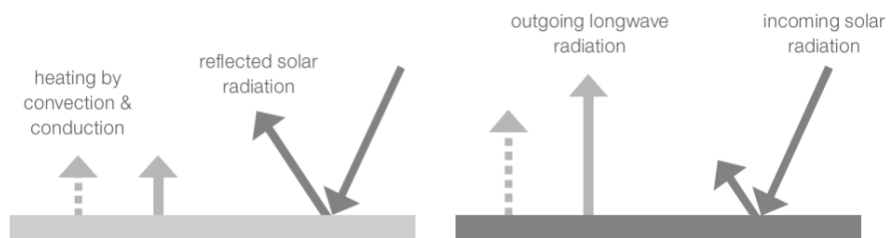


FIGURE 5.3 URBAN HEAT ISLAND EFFECT – IMPACT OF COLOUR SPECIFICATION (SOURCE: BLUESCOPE STEEL)

Impact

- This Planning Scheme response could generate benefits including:
 - » Minimised contribution to the built form urban heat island by increasing the heat reflected by pavements and rooftop materials
 - » Minimised rooftop solar gains in buildings
 - » Improved functionality of urban design strategy, placemaking, and use of public open space through reduced social infrastructure surface temperatures

- » Reduced energy consumption for built form (due to reduced external heat load) and associated greenhouse gases
- » Human health, wellbeing and comfort.

- The exact impact of the proposed surface urban heat island mitigation measure cannot be accurately quantified without microclimate modelling as the results are extremely sensitive to quantity and placement of mitigation measure.

Implementation considerations

- The Planning Scheme Amendment should consider application to the following thresholds:
 - » In line with Recommendation 1B, if a development is greater than 5000 squared metres in gross floor area, the development is recommended to achieve a 5 Star Green Star Buildings (or equivalent independent standard) certified rating. Under this approach, development will be required to achieve Credit 19 (Heat Resilience) which requires, at a minimum, that a building demonstrates that 75 per cent of the whole site area comprises one or a combination of strategies that reduce the heat island effect.
 - » For smaller developments below these thresholds, implementation could be considered through a Sustainability Management Plan (SMP) where developers would respond to a checklist of requirements to demonstrate how they have met the planning control.
- Precedent can be found in:
 - » Arden Precinct planning controls which contain a minimum requirement that the equivalent of at least 75 per cent of the development's total site area as building or landscape elements that reduce the impact of the urban heat island effect
 - » Fishermans Bend planning controls for new developments mandate equivalent SRI performance across 70 per cent of the total project site.
- Potential barriers to uptake for this Planning Scheme response:
 - » More guidance on what constitutes an increase in solar reflectance will need to be developed to guide developer responses. As much as possible this should mirror the Green Star Buildings credit criteria (Credit 19).
 - » Material selection must also consider heritage, character, durability or maintenance criteria. However, the capital cost impact for lighter

coloured metal and pavers is considered cost neutral compared to darker materials.

- A number of initiatives are underway that would support the uptake of private development site urban heat island performance criteria, including:
 - » Plan Melbourne (2017–2050) (2017b) Strategy Direction 6.4 which notes that 'Other methods of cooling the city include the use of special heat-reflective coatings for dark building surfaces to reduce the amount of heat absorbed'. By selecting cooler or more reflective materials, surface temperatures can be reduced by 20 to 40°C degrees compared to standard material specification (darker and more absorbent materials).
- Administrative considerations – discretions and exemptions may need to be considered by the responsible authority where it is demonstrated SRI values are unachievable.
- This Planning Scheme response should be delivered alongside Recommendation 1B (Private development sustainability certification), recommendations outlined in Environmental Enhancement and Protection, and the requirements and recommendations of the SRL East Structure Plan - Open Space Technical Report.

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Appendix A
**Policy and
planning
review**



A-1 Policy and planning review

Provisions of the planning scheme which relate to environmentally sustainable design (ESD) for the Monash Structure Plan Area are:

- The Planning Policy Framework which contains state, regional and local planning policies, including:
 - » Monash City Council Environmentally Sustainable Design planning policy (Clause 22.13)
- Particular provisions such as the energy efficiency requirements in Clauses 58 and 55.07 for Apartment Development, energy, and Clause 53.18 Stormwater Management in Urban Development.

The local ESD planning policies require the preparation of a Sustainable Design Assessment or Sustainable Management Plan (depending on development thresholds) which are based around the Sustainable Design Assessment in the Planning Process (SDAPP) Framework. The SDAPP framework was developed by Victorian local government councils to provide a streamlined and consistent methodology for requesting, receiving and assessing built environment sustainability outcomes through the planning process. The SDAPP Framework aims to ensure sustainability is considered at the very early design phase to maximise sustainability outcomes. The Framework sets policy objectives articulated in local ESD planning policies and supporting tools to implement the Framework, including the Built Environment Sustainability Scorecard (BESS).

Other requirements such as building regulations under the National Construction Code (NCC) must also be considered in the built environment.

The main sustainability challenges in the Monash Structure Plan Area Planning Scheme are summarised in Table A.1

TABLE A.1 SUMMARY OF SUSTAINABILITY CHALLENGES IN MONASH PLANNING SCHEME

Topic	Summary of challenge
General	<ul style="list-style-type: none"> • The Monash ESD planning policies require applicants for medium and large developments to prepare a Sustainable Design Assessment (SDA) or Sustainability Management Plan (SMP) (depending on the size of the development) to demonstrate how the development is addressing local ESD planning requirements. However, many planning policy elements are not mandated (they are ‘encouraged’) and the responsible authority makes a decision on the adequacy of the development approach.
General	<ul style="list-style-type: none"> • Implementation of SDAs and SMPs using BESS supports mandatory pass requirements on stormwater (100 per cent), indoor environment quality (50 per cent), water (50 per cent) and energy (50 per cent). However, BESS does not mandate achievement against other categories. It also does not address challenges related to materials, embodied carbon, climate resilience, or canopy coverage.
General	<ul style="list-style-type: none"> • Sustainable Design Fact Sheets support the implementation of ESD policies. Best practice expectations are considered against a range of sustainability challenges and climate response areas. However, implementation is primarily at the discretion of applicants.

A-1.1 POLICY ANALYSIS

Victoria’s legislative and policy framework outlines a strong focus on driving sustainability outcomes across climate change, biodiversity, circular economy and transport in the coming decades. Legislation such as the *Climate Change Act 2017* (Vic) and Victorian Government policies such as *Recycling Victoria: A new economy* (2020), and *Water for Victoria* (2016) aim to achieve net zero greenhouse gas emissions, support a circular economy, create integrated water management, and address climate change impacts across Melbourne.

A range of Monash City Council policies set sustainability objectives for the next decade. Monash’s *Environmental Sustainability Strategy 2016–2026* (2016) outlines their ambitions and proposed actions to respond to climate change and support community climate action. These are summarised in Appendix A.

There is a reasonably strong alignment between Victorian Government and local government policies with the SRL vision for sustainability, particularly in relation to biodiversity, urban forests and integrated water management outcomes. Ambitious targets in Plan Melbourne 2017-2050 (2017b) (supported by Monash) include increasing the tree canopy cover to 30 per cent, as well as long-term strategies to support collaboration with water authorities to develop flood resilience and recycled water.

The challenge for the Monash Structure Plan Area is that implementation of these policies through the existing local planning schemes is limited. This is a significant gap which, if not addressed, may prevent the Monash Structure Plan Area from achieving meaningful progress in achieving the SRL sustainability ambition.

A-2 Rating tools and frameworks

SRLA is committed to demonstrating leadership on climate action and sustainability and recognise that decisions on land use and development today have ongoing, long-term consequences for the future. Using a third-party 'green building' rating system may offer benefits of independent verification of built-form sustainability outcomes in the Monash Structure Plan Area. Third-party rating systems provide proof that architects, contractors, and consultants have fulfilled their promises in terms of sustainable design and operation, and help to verify that buildings meets specific standards, ensuring accountability and transparency.

The delivery of SRL offers the opportunity to rethink how development in the Monash Structure Plan Area occurs to drive a more sustainable and resilient built environment. This is particularly critical in the core of the Monash Structure Plan Area, where the most significant increase in development and population is expected.

While increased urban density can provide conveniences and potential sustainability benefits, the projected population growth also:

- **Intensifies resource consumption** – greater demands on energy and other natural resources
- **Increases waste generation** – leads to more waste being generated, which often goes to landfill
- **Reduces urban green space** – increases pressure on green space to accommodate high-density development











There is also increasing expectation from communities, occupiers, employees and investors that buildings are designed with sustainability and health at front of mind.

A range of existing best-practice sustainability guidance documents, frameworks and rating tools can be leveraged to ensure that leading sustainability outcomes in land use and development are achieved in the Monash Structure Plan Area. Table A.2 provides a high-level analysis of the applicability of the National Construction Code (NCC) Section J, the Built Environment Sustainability Scorecard (BESS), and Green Star Buildings to the sustainability focus areas in this Climate Response Plan.

The analysis found:

- The purpose of Section J of the National Construction Code (NCC) is to focus on energy efficiency in buildings. It encompasses regulations, requirements and guidelines to ensure commercial and residential constructions in Australia align with global sustainability standards. Section J can deliver outcomes related to reducing greenhouse gas emissions, efficient energy use and encouraging the use of on-site renewable energy. Section J plays a crucial role in promoting energy efficiency and sustainability in building design and operation, benefiting occupants and the environment, but does not deliver outcomes against the remaining Climate Response Plan focus areas.
- Adopting current sustainability frameworks such as BESS that support Sustainability Design Assessments (SDAs) and Sustainability Management Plan's (SMPs) as part of the Permit Application process do not adequately address the focus areas identified in the Climate Response Plan. The BESS framework is not mandated, meaning there is currently no requirement for developers to achieve all the outcomes prescribed in BESS (other than achieving the minimum credits for the mandatory categories) when applying for a planning permit. Even when the highest 'Excellent' score is targeted (>70 per cent score) the BESS framework delivers building performance that is below the benchmark of voluntary sustainability rating systems (such as Green Star) and is therefore not the focus of recommendations in the Climate Response Plan.
- Green Star Buildings strongly supports a broader range of sustainability outcomes that go beyond standard practice, and more closely align with the outcomes targeted in the Climate Response Plan, across all Climate Response Plan focus areas. More information on Green Star Buildings is provided in Section A-2.1.

TABLE A.2 FOCUS AREAS FOR MONASH CLIMATE RESPONSE PLAN AND ALIGNMENT TO OTHER FRAMEWORKS

Focus area	Strategy	Alignment to:		
		 NCC	 BESS	 Green Star
 Realising Net Zero	Enable reductions in energy consumption and an accelerated transition to net zero	Partial	Partial	✓
 Integrated Water Management	Embed sustainable water management practices in Structure Plan Area planning and design	✗	✓	✓
 Circular Economy and Sustainable Procurement	Foster responsible use of resources and supports the transition to a circular economy	✗	✗	✓
 Place-based Measures to Promote Zero Emissions Transport	Provide active and sustainable transport options	✗	✓	✓
 Climate Change Adaptation	Mitigate climate risks and hazards to create climate resilient and adaptive places	✗	✗	✓
 Environmental Enhancement and Protection	Protect natural habitats and improve biodiversity in green spaces and waterways	✗	✓	✓
 Urban Heat Island Strategy	Mitigate climate risks and hazards to create climate resilient and adaptive places	✗	Partial	✓

A comprehensive evaluation of the performance benchmarks against each sustainability framework in the context of the Monash Structure Plan Area has not been undertaken. The Council Alliance for a Sustainable Built Environment (CASBE) has undertaken more significant analysis on rating tools, which is available here at www.casbe.org.au/what-we-do/sustainability-in-planning/.

A-2.1 GREEN STAR

Green Star is a voluntary sustainability rating system for buildings in Australia. It was launched in 2003 by the Green Building Council of Australia (GBCA), a not-for-profit organisation with the key objective of driving the transition of the Australian property industry towards the design and construction of a more sustainable built environment.



The Green Star tools are holistic sustainability frameworks that are tried and tested in the Australian market.

TABLE A.3 GREEN STAR TOOL RECOMMENDATION

Rating tool – Green Star Buildings
<p>Launched in 2020, Green Star Buildings is especially designed to meet the challenges of the next decade, delivering assets that meet the expectations of today as well as being future ready and able to withstand evolving customer demands, regulatory requirements, and increased scrutiny against greenwashing.</p> <p>Green Star Buildings is a holistic tool that extends beyond the environment to address the issues that will define the next decade of the built environment. The tool's 8 categories enable owners and developers to act on the areas of sustainability that matter most, future proofing a building for the long-term.</p> <p>Green Star Buildings includes the Climate Positive Pathway which requires net zero operational energy. The pathway, which is mandatory for 5 Star Buildings, provides a clear set of targets aligned with the IPCC recommendations to help deliver a climate positive building which is fossil fuel free, powered by renewables, highly efficient, built with lower carbon materials and offset with nature. Any building that meets the climate positive pathway automatically complies with the Climate Bonds Initiative, making attracting investment simpler than ever.</p> <p>Green Star Buildings are specifically designed to align with leading frameworks, including the UN Sustainable Development Goals, GRESB, IPCC recommendations and the Task Force for Climate Related Financial Disclosure.</p>
<p>Recommendation 1B – Private development sustainability certification: Implement a Planning Scheme Amendment that requires achievement of a Green Star Buildings (or equivalent independent standard) certification. For details, see Section 4.1.</p>

A-2.2 EMERGING PLANNING

This Climate Response Plan coincides with other developments underway to improve the integration of best practice sustainable development requirements into Victorian and local government planning schemes. It is recommended this Climate Response Plan is revisited as these planning amendments and changes progress. This includes:

- **CASBE proposed ‘Elevating ESD Targets’ Planning Scheme Amendments** (n.d.) for 24 councils – the amendments are currently awaiting authorisation. CASBE sets out a range of proposed planning amendments that build on and elevate the existing local ESD policies and seek for them to be included as objectives and standards in a particular provision. Proposed ESD amendments would require new developments to:
 - » produce net zero operational carbon emissions
 - » make buildings more energy efficient
 - » provide a healthier and more comfortable environment for building occupants
 - » better manage water quality, use and collection; protect and enhance greening and biodiversity
 - » be more resilient to changing climate impacts.
- **Victorian Government ESD Roadmap** – implementation of the ESD roadmap is progressively making changes to the Victorian Planning Policy Framework. Further implementation will be underway to embed planning responses related to emerging Victorian Government strategies (such as reducing urban heat exposure, gas substitution). Updates to the Better Apartment Design Standards as a result of the Victorian Legislative Assembly Environment and Planning Committee’s 2021 Inquiry into apartment design standards will also be considered as part of the ESD Roadmap.
- **National Construction Code (NCC)** (2022) (to be adopted May 2024) updates – to enhance residential energy efficiency for houses and other low rise multiple dwelling projects, with the aim of improving the minimal level of thermal performance of new homes. NCC 2025 is proposed to progress energy efficiency enhancements for commercial buildings and may consider net zero emissions for residential homes, with consideration of embodied carbon (DCCEE 2023).

- **Climate Change and Energy Legislation Amendment (Renewable Energy and Storage Targets) Bill 2023** – proposes to bring forward Victoria’s net zero emissions targets to 2045, and enshrine interim targets in legislation. It also proposes to update the *Planning and Environment Act 1987 (Vic)* to include specific consideration of Victoria Government climate policy in the planning framework. Updates will also provide an additional duty to planning authorities to give due consideration to net zero targets and potential climate risks associated with development (Municipal Association of Victoria 2023).

The Arden and the Fishermans Bend urban renewal projects are instructive precedents for sustainable precinct development in Melbourne. These projects feature strong sustainability local policies through Clause 11.03 (Melbourne and Port Philip), which address topics including urban heat island and green infrastructure, sustainable transport, operational management plans, thresholds for 6 Star Green Star and a circular economy. Fisherman’s Bend also drives improved sustainability performance through Schedule 1 to Capital City Zone (Clause 37.04), which sets out application requirements and mandatory permit conditions relating to ESD. The policy precedents established at Arden and Fishermans Bend offer useful insights into the types of sustainable development requirements that have been pursued through urban renewal projects.

A-3 Detailed review summary

A-3.1 REALISING NET ZERO

Policy	Title	Summary	Delivery alignment
State Policy	<i>Climate Change Act 2017 (Vic)</i>	<p>This is Victoria's key piece of climate change legislation, which has established a target of net zero greenhouse gas emissions by 2050, which has recently been updated to 2045. This is supported by five-yearly interim emissions reduction targets. Key features include the following:</p> <ul style="list-style-type: none"> Objectives to support a transition to net zero emissions and increase the resilience of all systems (including the built environment) to climate-related hazards. Requires the State Government to develop plans every 5 years to address the impacts of climate change. 	<ul style="list-style-type: none"> Aligns with the SRL vision to deliver a climate responsive, net zero ready Structure Plan Area by 2045. To support these targets at a local level, there is a need to align with commitment to deliver buildings that achieve net zero emissions, or that are net zero ready. This is not currently a requirement in the planning scheme.
	Victoria's 2035 emissions reduction target (2023)	<p>This policy establishes Victoria's emissions reduction target of 75-80 % by 2035, and net zero emissions by 2045. It commits to the following:</p> <ul style="list-style-type: none"> Update legislated Victorian Renewable Energy Target (VRET) to 65 % by 2030. Legislate the new VRET target of 95 % renewable electricity by 2035. Renewable energy storage capacity targets of 2.6 gigawatts (GW) by 2030, and 6.3 GW of storage by 2035. Support existing homes to reduce emissions (e.g. via Solar Homes Program) and remove mandatory gas connection requirement for new housing developments. Update energy efficiency standards for all new buildings to support transition to buildings with lower energy use and emissions by 2030. 	<ul style="list-style-type: none"> Aligns with the SRL vision to deliver a climate responsive, net zero ready Structure Plan Area by 2045 and encourage uptake of renewable energy on a regional scale. To support these targets at a local level, there is a need to align with a commitment to deliver buildings that achieve net zero emissions, or that are net zero ready. This is not currently a requirement in the planning scheme.
	Victoria's Climate Change Strategy (2021)	<p>This is Victoria's first Climate Change Strategy with actions to cut emissions for 2021–2025 and beyond. It commits to the following:</p> <ul style="list-style-type: none"> Target to achieve net zero emissions by 2050 (note: updated to 2045). Source 50 % of Victoria's electricity from renewable energy sources by 2030 (note: proposed update to target aims for 65 % by 2030 and 95 % by 2035). Update NCC to require all new homes to meet at least 7 Star energy efficiency standards. Expand the Victorian Energy Upgrades (VEU) program to improve energy efficiency for households and businesses. Provide rebates for solar panels, solar hot water systems and batteries to 778,500 households. Provide rebates for solar panels to 15,000 small businesses. Fund construction of affordable, energy efficient homes and energy efficient upgrades. Strengthen NCC energy standards for new commercial buildings and refurbishments from 2025. Implement the Gas Substitution Roadmap Deliver local renewable energy projects (e.g. microgrids, neighbourhood batteries). 	<ul style="list-style-type: none"> Aligns with the SRL vision to deliver a climate responsive, net zero ready Structure Plan Area by 2045. Opportunity to align with commitment to deliver buildings that achieve net zero emissions, or that are net zero ready, reduce energy demand, elevate energy efficiency standards and facilitate renewable energy generation and storage. Consider measures to improve energy performance of commercial buildings, given that the strength of future updates to NCC standards is unknown.

Policy	Title	Summary	Delivery alignment
	Gas Substitution Roadmap (2023)	<p>This policy provides a roadmap to strengthen planning and building regulations and standards for new homes and commercial buildings by 2025, to phase out gas and transition to clean energy. It commits to the following:</p> <ul style="list-style-type: none"> Expand the VEU scheme to incentivise energy efficient products. Phases out VEU incentives for household gas appliances by the end of 2023. VPPs to phase out gas connections for new homes requiring planning permits from January 1, 2024 (implemented via amendment VC250). Investigate phased electrification of all new homes and most commercial buildings where feasible. Increase minimum energy efficiency standards for rented homes. Transition NCC to 7 Star Standard for new residential development. 	<ul style="list-style-type: none"> Aligns with the SRL vision to support deliver a climate responsive, net zero ready Structure Plan Area by 2045. Opportunity to align with commitments to eliminate gas from new development and transition to renewable electricity where feasible.
	Plan Melbourne 2017-2050 (2017b) (2017)	<p>Plan Melbourne sets out Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. It commits to the following:</p> <ul style="list-style-type: none"> Transition to a low carbon city to support Victoria's net zero emissions target (policy direction 6.1). This is to be achieved by actions to reduce energy demand, improve energy efficiency, and increase the share of renewable electricity. Support local, precinct-scale initiatives that combine renewable energy and energy efficiency solutions. Review planning system to support ESD outcomes and develop State-level ESD planning standards. Advocate for higher building energy efficiency standards under the NCC. Embed renewable energy and energy efficiency considerations in land use planning and precinct structure planning processes. 	<ul style="list-style-type: none"> Aligns with the SRL vision to deliver a climate responsive, net zero ready Structure Plan Area by 2045. Opportunity to align with commitments to reduce energy demand, improve energy efficiency, and utilise the planning scheme to provide performance standards that align with net zero targets, as state-wide ESD planning standards have not been introduced yet.
Council Policy	Monash City Council Zero Net Carbon Action Plan 2020-2025 (2020)	<p>This policy details outlines a pathway for Council to become carbon neutral by 2025, with various actions to address municipal emissions. It commits to the following:</p> <ul style="list-style-type: none"> Update the Environmental Sustainable Development policy (Monash Planning Scheme), to address GHG emission reductions. Partnering on Zero Net Precincts and research collaborations with Monash University. Investigate establishment of a Zero Net Emission Foundation to facilitate community action. Promote energy audits and environment upgrades for businesses and homes. Investigate establishment of 100 % renewable public electric vehicle charging stations. Establish business resilience programs to promote energy efficiency, and GHG emissions reduction actions. 	<ul style="list-style-type: none"> Aligns with the SRL vision to support action to strengthen the planning scheme and utilise partnerships to support delivery of a net zero Structure Plan Area. The planning scheme provides an opportunity to decarbonise private developments.
	Monash City Council Environmental Sustainability Strategy 2016–2026 (2016)	<p>This policy outlines Monash City Council's vision to deliver an innovative and environmentally sustainable garden city that is resilient, diverse, and thriving. It centres on aims which include planning and implementing a sustainable future and mitigating and adapting to climate change. It commits to the following:</p>	<ul style="list-style-type: none"> Aligns with the SRL vision to support action to improve energy efficiency and transition to renewable energy to support delivery of a net zero Structure Plan Area.

Policy	Title	Summary	Delivery alignment
		<ul style="list-style-type: none"> Encourage energy efficiency and uptake of renewable energy by participating in regional and local energy efficiency, renewable energy and climate adaptation programs. 	<ul style="list-style-type: none"> Identifies the role of private development to support emissions reductions in built environment.
Planning scheme	Settlement	<p>Clause 11.01-1S:</p> <ul style="list-style-type: none"> Features a strategy to deliver networks of high-quality integrated settlements by contributing to net zero greenhouse gas emissions through renewable energy infrastructure and energy efficient urban layout and urban design. 	<ul style="list-style-type: none"> Aligns the SRL vision by providing policy support for planning's role in the transition to net zero greenhouse emissions. However, the impacts of this high-level policy strategy are limited because the net zero ambition is focused at an urban design scale rather than a building design scale. Planning scheme does not set out specific requirements to deliver net zero emissions reductions for new developments.
	Built environment and heritage	<p>Clause 15:</p> <ul style="list-style-type: none"> States that planning should facilitate development that 'supports the transition to net zero greenhouse gas emissions'. 	<ul style="list-style-type: none"> Aligns with the SRL vision by providing policy support for planning's role in the transition to net zero greenhouse emissions. However, the impacts of this policy strategy are limited because the planning scheme does not set out specific requirements to deliver net zero emissions reductions for new developments.
	Building design	<p>Clause 15.01-2S:</p> <ul style="list-style-type: none"> Features a strategy to improve building energy performance through siting and design measures that encourage passive design responses to minimise energy demand, on-site renewable energy generation and storage technology and use of low embodied carbon materials. Features a strategy to restrict the provision of reticulated natural gas in new dwelling development. 	<ul style="list-style-type: none"> Aligns with the SRL vision to drive energy performance improvements. However, the impacts of this policy strategy are limited because the planning scheme does not require building energy performance improvements for every development. Natural gas is prohibited in new dwellings, however, is allowed in all new commercial buildings (including offices).
	Renewable energy	<p>Clause 19.01-2R:</p> <ul style="list-style-type: none"> Features a strategy to facilitate the uptake of renewable energy technologies on a site-by-site and neighbourhood level during the master planning of new communities. 	<ul style="list-style-type: none"> Aligns with the SRL vision by supporting renewable energy uptake through the planning scheme. However, there are no requirements for inclusion of renewable energy technologies for development typologies that often consume larger amounts of energy (e.g. high-density commercial buildings).
	Environmentally sustainable development	<p>Clause 22.13 (Monash):</p> <ul style="list-style-type: none"> This is the key ESD planning policy in the planning scheme. It includes various strategies to facilitate and encourage environmentally sustainable development. Features objectives to improve energy efficiency through design measures including building orientation, shading, optimising 	<ul style="list-style-type: none"> Aligns with the SRL vision by requiring applicants to prepare an SDA or SMP that must consider energy efficiency. However, the planning scheme does not set out specific requirements to deliver net zero emissions reductions for new developments.

Policy	Title	Summary	Delivery alignment
		<p>glazing and supporting uptake of renewable technology.</p> <ul style="list-style-type: none"> • A Sustainable Design Assessment (using BESS, STORM or other methods) or a Sustainability Management Plan (using BESS/Green star, STORM/MUSIC or other methods) and a Green Travel Plan required for residential and non-residential developments above given thresholds, and mixed-use development 	<ul style="list-style-type: none"> • BESS requires a 50 % mandatory energy score. However, the impact on development is limited because this score can be achieved through a variety of credits and does not include mandatory on-site renewable energy provision.
	Energy supply	<p>Clause 19.01-1S:</p> <ul style="list-style-type: none"> • Features strategies to support the development of energy generation, storage, transmission, and distribution infrastructure to transition to a low-carbon economy and to facilitate renewable energy generation and storage to meet on-site energy needs. • Policy guidelines note to consider as relevant the long-term and interim emissions reduction targets under the <i>Climate Change Act 2017</i> (Vic). 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting renewable energy uptake through the planning scheme. • This policy seeks to facilitate renewable energy development such as solar farms and wind farms. • Opportunity to consider how SRLA can support uptake of neighbourhood-scale renewable energy solutions, through structure planning and/or strategic partnerships.

A-3.2 INTEGRATED WATER MANAGEMENT

Policy	Title	Summary	Delivery alignment
State Policy	Integrated Water Management Framework for Victoria (2017a)	<p>This policy provides a strategic framework to guide collaboration between water sector stakeholders to deliver urban water management initiatives.</p> <ul style="list-style-type: none"> • Led to the establishment of forums to implement integrated water management practices. • Forums are responsible for driving integrated water management through collaboration to identify, prioritise and oversee the implementation of shared water opportunities. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by promoting interdisciplinary collaboration to deliver exemplary integrated urban water management outcomes.
	Water for Victoria (2016)	<p>This policy outlines the Victorian Government's strategic plan to sustainably manage water resources. The plan identifies the following measures to support resilient and liveable cities and towns. It commits to the following:</p> <ul style="list-style-type: none"> • Urban water corporations to develop climate change and resilience strategies which address alternative water sources. • Partnerships between water sector and local government to improve wastewater management. • Review planning and building regulations to improve stormwater management. • Diversify water sources, including recycled water and stormwater. • Adopt integrated water planning across Victoria, with place-based planning to support community values and local opportunities. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting integrated water management to maximise liveability outcomes for all users and promote resilience to climate change and extreme weather events.
	Plan Melbourne 2017-2050 (2017b)	<p>Plan Melbourne sets out Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. A directive is to integrate urban development and water cycle management to support a resilient and liveable city and reduce pressure on water supplies. It commits to the following:</p> <ul style="list-style-type: none"> ▪ Strengthen planning provisions and precinct structure planning to make best use of all water sources in homes and precincts. ▪ Integrated water management forums to identify and prioritise places that would most benefit from the development of a place-based integrated water management plan. ▪ Protect water, drainage, and sewerage assets with land area buffers to protect from urban encroachment. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by proposing action to update the planning scheme and structure planning to support integrated water management within the Structure Plan Area
	Built Environment Climate Change Adaptation Action Plan 2022-2026 (2022b)	<p>This policy establishes a vision for the built environment to be planned, designed, and operated to support climate resilient communities that can withstand water scarcity and flooding. It commits to the following:</p> <ul style="list-style-type: none"> • Planning to address water-efficient design, water conservation and integrated water management practices (e.g. reuse of stormwater and recycled water). • Regulatory options as a cost-efficient means to support water conservation (e.g. rainwater tank installation and higher efficiency standards). • Design all new drainage and flood management infrastructure to account for climate change. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting role of planning to deliver integrated water management design measures to enhance climate resilience.
	Building Victoria's Climate Resilience (2022a)	<p>This policy sets out Victoria's approach to adapt and build resilience to climate change. A priority area is to integrate climate change adaptation into all aspects of the water cycle system (2022-2026). It commits to the following:</p> <ul style="list-style-type: none"> • Utilise alternative water sources. • New water efficiency standards for homes. • Review building and plumbing requirements for rainwater tanks and water efficiency. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting updated planning and building requirements to improve water efficiency and utilise alternative water sources.
	Council Policy	Co-Designed Catchment Program for the	<p>This policy provides a strategic framework to protect and enhance the health of waterways of the Port Phillip and Westernport region to deliver co-benefits to the</p>

Policy	Title	Summary	Delivery alignment
	Dandenong Catchment Region: Working together for healthy waterways (2021)	<p>environment, community, and economy. Goals include managing the catchment to be integrated and address the whole water cycle. It commits to the following:</p> <ul style="list-style-type: none"> • Use Victoria's planning system effectively to protect and enhance waterway corridor. • Ensure programs, standards, tools, and guidelines are in place to protect wetland vegetation communities from urban and rural threats. 	<p>deliver integrated water management design measures to deliver a broad range of liveability benefits.</p>
	Monash City Council Environmental Sustainability Strategy 2016–2025 (2016)	<p>This policy outlines Monash City Council's vision to deliver an innovative and environmentally sustainable garden city that is resilient, diverse and thriving. It centres on aims which include integrating and saving water. It commits to the following:</p> <ul style="list-style-type: none"> • All development assessed against best practice Water Sensitive Urban Design (WSUD) principles. • Utilise the planning scheme and compliance tools to protect and conserve water resources. • Encourage integrated and efficient water usage and improved waterway quality and health. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by promoting strategic approach to integrated water management. • Supports implementation through the planning scheme.
Planning scheme	Integrated Water Management	<p>Clause 19.03-S:</p> <ul style="list-style-type: none"> • Seeks to sustainably manage water supply and demand, water resources, wastewater, drainage, and stormwater through an integrated water management approach. • Features a strategy to plan and coordinate integrated water management, bringing together stormwater, wastewater, drainage, water supply, water treatment and re-use, to: <ul style="list-style-type: none"> » Consider the catchment context. » Protect downstream environments, waterways, and bays. » Manage and use potable water efficiently. » Reduce pressure on Victoria's drinking water supplies. » Minimise drainage, water or wastewater infrastructure and operational costs. » Minimise flood risks. » Provide urban environments that are more resilient to the effects of climate change. » Manage stormwater quality and quantity through a mix of on-site measures and developer contributions at a scale that will provide greatest net community benefit. » Integrate water into the landscape to facilitate cooling, local habitat improvements and provision of attractive and enjoyable spaces for community use. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting the proposed outcomes for integrated water management for the Structure Plan Area. • However, the impacts of this policy strategy are limited because supported outcomes are not mandatory.
	Building Design	<p>Clause 15.0-2S:</p> <ul style="list-style-type: none"> • Includes the strategy to encourage water efficiency and the use of rainwater, stormwater, and recycled water. • Seeks to minimise stormwater discharge through site layout and landscaping measures that support on-site infiltration and stormwater reuse. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by encouraging water efficiency and stormwater reuse. • However, the impacts of this high-level policy strategy are limited because supported outcomes are not mandatory.
	Stormwater Management in Urban Development	<p>Clause 53.18:</p> <ul style="list-style-type: none"> • Provides standards for the retention and reuse of stormwater, mitigation of the impacts of stormwater on the environment, property, and public safety, and to provide cooling, local habitat, and amenity benefits. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by providing standards that require development to meet the current best

Policy	Title	Summary	Delivery alignment
			practice performance objectives for stormwater quality, to maximise the retention and reuse of stormwater, and to demonstrate capability to manage storm events.
	Integrated waste and stormwater management - Apartment Design Standards	<p>Clause 55.07-5 (Apartments up to 4 storeys) and Clause 58.03-8 (Apartments 5 storeys and above):</p> <ul style="list-style-type: none"> Standards apply to apartment buildings only and seek to ensure developments collect rainwater for non-drinking purposes such as flushing toilets, laundry appliances and garden use. Connecting to a non-portable dual pipe is encouraged but not required. Policy also seeks that buildings are connected to a non-portable dual pipe reticulated water supply, where available from the water authority. 	<ul style="list-style-type: none"> Aligns with SRL vision by promoting reuse of stormwater. However, the impact of standards is limited because they are expectations as opposed to mandatory requirements. The stormwater management system should be designed to meet the current best practice performance objectives for stormwater quality.
	Stormwater management	<p>Clause 22.06 (Monash):</p> <ul style="list-style-type: none"> Requires that stormwater flows generated from increased impervious areas be managed by on-site retention systems and that development be designed and managed to minimise the impact of urban stormwater runoff on waterways in accordance with any best practice environmental management guideline 	<ul style="list-style-type: none"> Aligns with the SRL vision by encouraging water sensitive urban design. Clause is mostly implemented through the requirements of Clause 53.18 and SMP requirements of Clause 15.02-2L.
	Environmentally sustainable development	<p>Clause 22.13 (Monash):</p> <ul style="list-style-type: none"> Features strategies on the following: <ul style="list-style-type: none"> Reduce total operating potable water use through appropriate design measures such as water efficient fixtures, appliances, equipment, irrigation, and landscaping. Encourage the appropriate use of alternative water sources (including greywater, rainwater, and stormwater). Incorporate best practice water sensitive urban design to improve the quality of stormwater runoff and reduce impacts on water systems and water bodies. Direct run-off into garden areas. Clause can be addressed under BESS. BESS also seeks water efficient fittings and appliances, and irrigation by non-portable water. Sustainability Management Plans or Sustainable Development Applications have a mandatory requirement to meet the Urban Stormwater Management Best Practice standards for water quality (CSIRO, 1999), e.g. through min 100 % STORM score, or compliant MUSIC model. 	<ul style="list-style-type: none"> Aligns with the SRL vision with some requirements on urban stormwater management. However, other water sensitive urban design measures and stormwater quality treatment measures are not mandatory and are only encouraged.

A-3.3 CIRCULAR ECONOMY AND SUSTAINABLE PROCUREMENT

Policy	Title	Summary	Delivery alignment
State Policy	Recycling Victoria: A new economy (2020)	<p>This policy outlines Victoria’s targets for 2030 to support waste reduction and resource recovery. It commits to the following:</p> <ul style="list-style-type: none"> • Reduce waste to landfill (80 % of waste diverted from landfill by 2030) • Reduce waste generation per person (15 % reduction) • Halve the volume of organic materials going to landfill. • All households to have organic waste recycling services by 2030. • Support appropriate waste to energy industry and will require mandatory recycling separation by commercial sites. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision with clear goals to avoid waste generation and maximise recovery of resources over the next decade. • Provides appropriate support to the expected development in the Structure Plan Area by ensuring increasing organic waste is managed across households.
	Victoria Statewide Waste and Resource Recovery Infrastructure Plan (2018)	<p>This policy provides strategic direction for managing resource recovery and waste infrastructure in Victoria for 30 years, including across key waste streams such as organics, recyclables, construction and demolition waste, and e-waste. It commits to the following:</p> <ul style="list-style-type: none"> • Guide an integrated statewide waste and resource recovery system that effectively manages the expected mix and volumes of wastes and materials. • Support a viable resource recovery industry. • Reduces the number of valuable materials going to landfill. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision by proposing actions that aim to support a circular economy across Victoria by providing the appropriate infrastructure to manage future waste generation and needs, including in the Structure Plan Area.
Council Policy	Monash City Council Waste Management Strategy 2017-2027 (2017)	<p>This policy sets out general goals and supporting actions based on the waste hierarchy. It commits to the following:</p> <ul style="list-style-type: none"> • Reduce waste to landfill and waste generation through education, engagement and opportunities to introduce resource recovery (e.g. food organics). 	<ul style="list-style-type: none"> • Aligns with the SRL vision by supporting improved resource recovery, with actions primarily focused on encouraging local community action. • However, the impact may be limited due to lack of measures targeting the built environment.
	Monash City Council Zero Net Carbon Action Plan 2020-2025 (2020)	<p>This policy sets out goals to strengthen sustainable procurement, minimise embodied GHG emissions, and source recycled content in design and construction for Council operations; as well as support facilitation of circular economy throughout community by providing incentives and opportunities and investigating alternate waste treatment (e.g. waste to energy). It sets a clear target to increase waste diversion from landfill by 75 % by 2027.</p>	<ul style="list-style-type: none"> • Aligns with the SRL vision by setting clear aspirations to achieve circular economy outcomes, particularly through sustainable procurement practices and resource recovery. • However, the specific targets set to achieve this may not align with the increase in development that is expected in the Structure Plan Area.
Planning scheme	Waste and resource recovery	<p>Clause 19.03-5S:</p> <ul style="list-style-type: none"> • Includes a strategy to ensure future waste and resource recovery infrastructure needs are identified and planned for to manage all waste streams safely and sustainably and maximise opportunities for resource recovery. 	<ul style="list-style-type: none"> • Aligns with the SRL vision to sustainably manage all waste streams and to maximise opportunities for resource recovery.
	Building Design	<p>Clause 15.01-2S:</p> <ul style="list-style-type: none"> • Includes a strategy to ensure the layout and design of development supports resource recovery, including separation, storage and collection of 	<ul style="list-style-type: none"> • Aligns with the SRL vision to facilitate a circular economy through resource recovery. • This policy applies to all new buildings but has limited impact

Policy	Title	Summary	Delivery alignment
		waste, mixed recycling, glass, organics and e-waste.	<p>due to a lack of specific performance requirements.</p> <ul style="list-style-type: none"> This policy does not include any consideration of construction and demolition waste
	ResCode and Apartment Development Standards	<p>Clause 55.07-11 and Clause 58.06-1:</p> <ul style="list-style-type: none"> Requires consideration of waste and recycling in new dwelling developments through the preparation of a Waste Management Plan. 	<ul style="list-style-type: none"> Aligns with the SRL vision to integrate circular economy and waste considerations into development design and operations. However, the impact of this policy is limited because it only applies to residential developments. There are no considerations or requirements around construction and demolition waste.
	Environmentally sustainable development	<p>Clause 22.13 (Monash):</p> <ul style="list-style-type: none"> Strategy to promote waste avoidance, reuse and recycling during the design, construction, and operation stages of development. Strategy to encourage use of durable and reusable building materials. Strategy to ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities. 	<ul style="list-style-type: none"> Aligns with the SRL vision to consider waste in the design, construction, and operation of buildings. However, the impact of this policy is limited due to a lack of specific requirements for SMPs. There is also limited scope on waste management credits in the BESS scorecard, which addresses building re-use, food and garden waste and convenience of recycling. There is a need to strengthen requirements around construction and demolition waste and building materials.

A-3.4 CLIMATE CHANGE ADAPTATION

Policy	Title	Summary	Delivery alignment
State Policy	<i>Climate Change Act 2017</i> (Vic)	<p>This policy is Victoria's key piece of climate change legislation, which establishes a target of net zero greenhouse gas emissions by 2050, which has recently been updated to 2045. It commits to the following:</p> <ul style="list-style-type: none"> • A net zero target with five-yearly interim emissions reduction targets. • Transition to net zero emissions and increase the resilience of all systems (including the built environment) to climate-related hazards. • State Government to develop plans every 5 years to address the impacts of climate change. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision to deliver a climate resilient Structure Plan Area by supporting adaptation measures in all sectors of the economy (including the built environment).
	Building Victoria's Climate Resilience (2022)a	<p>This policy sets out Victoria's approach to adapt and build resilience to climate change across seven key systems including the built environment. It commits to the following:</p> <ul style="list-style-type: none"> ▪ Update building standards to better account for climate change impacts. ▪ Partnerships to support vulnerable communities to adapt to climate change. • Support hazard-exposed communities to develop place-based resilient energy generation, including through temporary relief measures. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision by supporting adaptation measures that are implemented through building standards and the planning systems.
	Built Environment Climate Change Adaptation Action Plan 2022-2026 (2022b)	<p>This policy establishes a vision for the built environment to be planned, designed, and operated to support climate resilient communities. It commits to the following:</p> <ul style="list-style-type: none"> • By 2031, integrate climate change adaptation and emissions reduction into all relevant investment and decision-making across the Built Environment system. • By 2051, adapt the entire Built Environment to climate change and contribute to emissions reduction. • Update planning provisions to respond to climate change. • Update building standards relevant to climate hazards. • Support upgrades of existing building stock. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision by supporting climate change adaptation measures that are integrated into the design and delivery of the built environment. • Supports implementation of climate change adaptation through the planning scheme.
	Plan Melbourne 2017-2050 (2017b)	<p>This policy establishes Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. It commits to the following:</p> <ul style="list-style-type: none"> • Strategic land use and infrastructure planning to mitigate exposure to natural hazards and adapt to the impacts of climate change. • Mitigate exposure to natural hazards and adapting to the impacts of climate change 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision by encouraging climate change adaptation considerations to be integrated into strategic land use and infrastructure planning.
	Victoria's Climate Change Strategy (2022)	<p>This policy details Victoria's current responses to climate change to achieve emissions reductions targets and increase climate resilience.</p> <ul style="list-style-type: none"> • Priority actions include ensuring relevant legislation, standards and codes support the use of best available climate change data and adaptive planning principles as part of decision-making on land use change and development. 	<ul style="list-style-type: none"> • Closely aligns with the SRL vision to ensure land use planning and development decision-making accounts for climate change.
	Council Policy	Monash City Council	<p>This policy outlines Monash City Council's vision to deliver an innovative and environmentally</p>

Policy	Title	Summary	Delivery alignment
	Environmental Sustainability Strategy 2016-2026 (2016)	<p>sustainable garden city that is resilient, diverse, and thriving. It commits to the following:</p> <ul style="list-style-type: none"> • Integrate best practice climate change thinking into Council's corporate and operational functions. • Establish strategic approach to reduce Council's corporate greenhouse gas emissions. • Increase community preparedness for the likely impacts of climate change. 	<p>supporting community preparedness for the likely impacts of climate change.</p> <ul style="list-style-type: none"> • Significant opportunity to deliver this through specific planning requirements on climate change adaptation for new developments.
Planning scheme	Settlement	<p>Clause 11:</p> <ul style="list-style-type: none"> • Planning is to recognise the need for, and as far as practicable, contribute, towards climate change adaptation and mitigation. 	<ul style="list-style-type: none"> • Aligns with SRL vision by providing high-level recognition of the role of the planning system in climate change adaptation. • However, the impact of this policy is limited because it does not provide specific policies related to climate change resilience or adaptation relevant to the Monash Structure Plan Area.
	Natural hazards and climate change	<p>Clause 13.01-1S:</p> <ul style="list-style-type: none"> • Features strategy to develop adaptation response strategies for existing settlements in risk areas to accommodate change over time. • Features strategy to ensure that planning controls allow for risk mitigation and climate change adaptation strategies to be implemented. 	<ul style="list-style-type: none"> • Aligns with the SRL vision by providing support for climate change adaptation planning controls to be implemented at the local level. • However, the impact of this policy is limited because it does not provide specific policies related to climate change resilience or adaptation relevant to the Monash Structure Plan Area.

A-3.5 ZERO EMISSIONS TRANSPORT

Policy	Title	Summary	Delivery alignment
State Policy	<i>Transport Integration Act 2010</i> (Vic)	This policy is Victoria's principal transport Act. It features objectives that transport should actively contribute to environmental sustainability (Sect 10). It commits to: <ul style="list-style-type: none"> Promote forms of transport which reduce environmental impacts and contribution of transport-related greenhouse gas emissions. Seek to increase the share of public transport, walking and cycling trips. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by promoting active and low-carbon transport options to contribute to a climate responsive transport network and deliver positive environmental outcomes.
	Victoria's Climate Change Strategy (2022)	This policy details Victoria's response to climate change to achieve emissions reductions targets and increase climate resilience. It commits to: <ul style="list-style-type: none"> Promote action and targets to invest in innovative zero-emissions technologies, climate smart businesses and communities. Electrify public transport network. Increase provision of cycling and walking infrastructure 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by supporting a climate responsive transport network which supports zero emissions technologies.
	Zero Emissions Vehicle Roadmap (2021c)	This policy provides a roadmap for Victoria to support a fully decarbonised road transport sector by 2045. It commits to the following: <ul style="list-style-type: none"> Update the NCC from 2022 to reduce barriers to future installation of EV charging in new buildings. Land use planning to increase active transport and reduce car dependency. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision to reduce emissions in transport by supporting uptake of less carbon-intensive transport choices and reducing transport-related GHG emissions.
	Plan Melbourne 2017-2050 (2017b)	Plan Melbourne sets out Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. It commits to the following: <ul style="list-style-type: none"> 20-minute city where communities can meet daily needs within a 20-minute walk, cycle or local public transport trip. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by seeking to deliver climate responsive transport network that reduces emissions through increased active transport.
	Victorian Cycling Strategy 2018-2028 (2018)	This policy establishes a vision and strategy to increase cycling uptake in Victoria. It commits to: <ul style="list-style-type: none"> Investing in a safer, lower-stress, better-connected network. Prioritise strategic cycling corridors. Make cycling a more inclusive experience. 	<ul style="list-style-type: none"> Aligns with the SRL vision by promoting active and low-carbon transport options to contribute to a climate responsive transport network.
	Local Policy	Monash City Council ESD Policy for Buildings and Infrastructure (2022)	This policy sets various actions addressing transport emissions in Council buildings and infrastructure to achieve by 2025. It commits to the following: <ul style="list-style-type: none"> Infrastructure supports all forms of active transport. Infrastructure supports safety for pedestrians, cyclists, and electric mobility users. Incorporate end of trip facilities using Green Star standards where feasible. Consider providing EV charging infrastructure, charging, and cabling wherever feasible.
Monash City Council Integrated Transport Strategy (2017)		This policy sets out Monash City Council's 20-year strategy to deliver an accessible and sustainable transport network. It commits to the following: <ul style="list-style-type: none"> Implement Pedestrian Oriented Design (POD) and Road User Hierarchy principles to promote active/public transport. Eliminate missing links in the active transport network. Reduce car dependency and encourage walking and cycling to access public transport. Plan for technology to help lower private vehicle dependency. 	<ul style="list-style-type: none"> Aligns with the SRL vision by promoting zero-emissions forms of transport, particularly through cycling, walking and public transport. Recognises opportunity to support EVs as a means to decarbonise private vehicle transport.

Policy	Title	Summary	Delivery alignment
		<ul style="list-style-type: none"> Establish EV charging stations within new developments. 	
	Monash City Council Walking and Cycling Strategy	<p>This policy provides a framework and principles to promote walking and cycling through planning, design, maintenance and management of pathways and trails. It commits to the following:</p> <ul style="list-style-type: none"> Planning and providing opportunities to optimise the integration of walking and cycling networks, including footpaths and trails. 	<ul style="list-style-type: none"> Aligns with the SRL vision by improving the municipal walking and cycling network, particularly in relation to public land and infrastructure projects. The scope of focus can be extended beyond Council operations to consider how private development can support uptake of walking and cycling.
	Monash City Council Zero Net Carbon Action Plan 2020-2025 (2020)	<p>This policy seeks to provide a pathway for Monash City Council to become carbon neutral by 2025. It commits to the following:</p> <ul style="list-style-type: none"> Optimise fuel use in fleet vehicles and transition to electric vehicles. Investigate establishing 100 % renewable public EV charging stations. 	<ul style="list-style-type: none"> Aligns with the SRL vision by supporting EVs as a means to decarbonise transport systems.
Planning scheme	Sustainable and safe transport	<p>Clause 18.01-3S: Features strategies to deliver the following:</p> <ul style="list-style-type: none"> Prepare for and adapt to climate change impacts. Prioritise the use of sustainable personal transport. Protect, conserve, and improve the natural environment by supporting forms of transport, energy use and transport technologies that have the least environmental impact. Avoid, minimise, and offset harm to the environment by protecting biodiversity and reducing transport-related greenhouse gas emissions. Design development to promote walking, cycling and the use of public transport, in that order, and minimise car dependency. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by facilitating an environmentally sustainable transport system that prioritises walking and cycling, and public transport over private car use. However, the impact of this policy is limited because it does not include any specific requirements for new developments.
	Environmentally sustainable development	<p>Clause 22.13 (Monash):</p> <ul style="list-style-type: none"> Design development to promote the use of walking, cycling and public transport, in that order; and minimise car dependency. Promote the use of low emissions vehicle technologies and supporting infrastructure. 	<ul style="list-style-type: none"> Aligns with the SRL vision with objectives to support active and public transport. However, the impact of this policy is limited because there is no mandatory pass score in BESS for transport categories. Under BESS, credits can be achieved for providing 1 bicycle space per dwelling for residents and 1 space per 5 dwellings for visitors, located in a convenient location. For non-residential, employee bicycle parking at 50 % more than existing Planning Scheme requirements can be awarded credits. Provisions of electric vehicle Infrastructure is limited to credit for providing one space that has electric vehicle charging infrastructure installed.

A-3.6 ENVIRONMENTAL ENHANCEMENT AND PROTECTION

Policy	Title	Summary	Delivery alignment
State Policy	Plan Melbourne 2017-2050 (2017b)	<p>This policy sets out Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. It commits to the following:</p> <ul style="list-style-type: none"> Support a cooler Melbourne by greening urban areas, buildings, transport corridors and open spaces to create an urban forest. Features various actions to promote enhanced greening outcomes. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by promoting green network enhancements, habitat restoration and open space connectivity.
	Living Melbourne: our metropolitan urban forest (2019)	<p>This policy outlines Melbourne's strategy to 2050 to increase urban resilience by enhancing greening and urban forest approaches across metropolitan regions. It commits to the following:</p> <ul style="list-style-type: none"> Protect and restoring species habitat and connectivity. Increase urban canopy and understorey to achieve various targets across metropolitan regions. Increase greening in the private realm by strengthening planning and development standards. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by advancing targets for canopy coverage and understorey provision to enhance habitat provision and connectivity.
	Protecting Victoria's Environment Biodiversity 2037 (2023)	<p>This policy communicates the long-term vision for Victoria's biodiversity to address challenges presented by climate change and population growth. It commits to the following:</p> <ul style="list-style-type: none"> Strategic land-use planning tools to better protect areas of private land that support significant biodiversity values. Identify opportunities for targeted land purchases. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by promoting action to deliver biodiversity conservation through strategic planning and provision of habitat.
	Metropolitan Open Space Strategy (2021a)	<p>This policy provides a framework to strengthen Melbourne's open space network to enhance connectivity and maximise positive experiences in open spaces for the community. It commits to the following:</p> <ul style="list-style-type: none"> Explore place-based planning approaches to integrate green and blue infrastructure in precinct delivery. Review and, where needed, update relevant sections of the Victoria Planning Provisions and local planning schemes to align with the strategic framework. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by seeking to enhance provision of open space and green infrastructure through the planning scheme and structure planning.
Council Policy	Monash City Council Urban Landscape and Canopy Vegetation Strategy (2018)	<p>This policy outlines strategic objectives and guidelines to deliver upon landscape and canopy cover objectives for the municipality, accounting for projected increases in population and development. It commits to the following:</p> <ul style="list-style-type: none"> 30 % tree cover across public and private land by 2040. Strengthen the biodiversity values along the waterway corridors by increasing the presence of indigenous vegetation on both public and private land. Maximise the retention of existing healthy mature large canopy trees on public and private land. Increase the presence of large canopy trees and greening in high density precincts including activity centres and the Monash NEIC. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by supporting enhanced tree canopy coverage targets and seeking to enhance greening measures in the built environment.
	Monash City Council Environmental	<p>This policy outlines Monash City Council's vision to deliver an innovative and environmentally</p>	<ul style="list-style-type: none"> Closely aligns with the SRL vision by seeking to use the planning system to deliver a

Policy	Title	Summary	Delivery alignment
	Sustainability Strategy 2016-2026 (2016)	sustainable garden city that is resilient, diverse, and thriving. It commits to the following: <ul style="list-style-type: none"> Consider garden city character principles in planning of future strategic growth, (especially Structure Plans) Pursue opportunities for sustainable strategic plans and policies to be incorporated within the Planning Scheme including the Municipal Strategic Statement (MSS). Protect and enhance Monash's biodiversity and landscape character through planning processes. 	strategic approach to landscape planning which recognises biodiversity, habitat connectivity and builds ecosystem resilience.
	Monash City Council Urban Biodiversity Strategy 2018-2028 (2018)	This policy defines the vision, directions and actions to manage biodiversity for the next 10 years. It commits to the following: <ul style="list-style-type: none"> Implement the Urban Biodiversity Strategy in the Monash Planning Scheme, including strengthening objectives and strategies in the MSS about biodiversity, and giving local direction to State policies. Investigate options to strengthen clause 52.17 to protect native vegetation. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by driving improvements to planning standards to protect and enhance biodiversity and native vegetation.
Planning scheme	Protection of biodiversity	Clause 12.01S: <ul style="list-style-type: none"> Features strategies to assist in the establishment, protection, and re-establishment of links between important areas of biodiversity, including through a network of green spaces. Support land use and development that contributes to protecting and enhancing habitat for indigenous plants and animals in urban areas. 	<ul style="list-style-type: none"> Aligns with the SRL vision by providing high-level policy support for a network of green spaces and enhancing biodiversity. However, the impacts of policy strategies are limited because supported outcomes are encouraged, but not mandatory.
	Landscaping - Apartment Design Standards	Clause 55.07-4 (Apartments up to 4 storeys) and Clause 58.03-5 (Apartments 5 storeys and above): <ul style="list-style-type: none"> Includes metrics for deep soil and canopy tree provision. This policy applies to apartment developments only. It provides a sliding scale for greater deep soil and tree canopy coverage for site area. Canopy coverage requirements range from 5 % for small sites to up to 20 % for sites larger than 2500sqm. 	<ul style="list-style-type: none"> Aligns with the SRL vision by supporting landscaping provisions in high-density developments. However, the application of this standard is limited because it depends on the development context.
	Sustainability and Environment	Clause 21.13-3 (Monash): <ul style="list-style-type: none"> Seeks to maintain and enhance biodiversity through the protection and management of areas of native vegetation including flora and fauna species. 	<ul style="list-style-type: none"> Aligns with the SRL vision by supporting the protection and enhancement of biodiversity in existing areas containing native vegetation such as creek environs. However, the impacts of policy strategies are limited because supported outcomes are encouraged, but not mandatory.
	Environmentally sustainable development	Clause 22.13 (Monash): <ul style="list-style-type: none"> Includes a strategy to protect and enhance biodiversity by incorporating natural habitats and planting indigenous vegetation. 	<ul style="list-style-type: none"> Aligns with the SRL vision by encouraging tree retention, planting of indigenous vegetation, and enhancing biodiversity. However, the impact of this policy is limited because it does not include any metrics or specific requirements.

Policy	Title	Summary	Delivery alignment
			<ul style="list-style-type: none"> Under the BESS credit scoring, more points are available if the percentage of the site that is vegetated is increased. There are no minimum requirements, no metrics around tree canopy coverage, and no mandatory minimum pass scores for urban ecology.
	Tree conservation policy	Clauses 22.04 (Monash): <ul style="list-style-type: none"> Includes the policy directives to retain semi-mature and mature canopy tree wherever possible and that semi-mature canopy trees with spreading crowns be planted as part of any development. 	<ul style="list-style-type: none"> Aligns with the SRL vision to retain or replace trees. However, there are no further requirements in relation to environment enhancement.

A-3.7 URBAN HEAT ISLAND

Policy	Title	Summary	Delivery alignment
State Policy	Plan Melbourne 2017-2050 (2017b)	Plan Melbourne sets out Melbourne's 35-year strategy to guide long-term land use, infrastructure, and transport planning. It commits to the following: <ul style="list-style-type: none"> Support a cooler Melbourne by greening urban areas, buildings, transport corridors and open spaces to create an urban forest and to strengthen the integrated metropolitan open space network. Update residential development provisions to mitigate against the loss of tree canopy cover and permeable surfaces because of urban intensification. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by supporting measures in land use planning and the planning scheme to enhance greening to support cooling.
	Living Melbourne: our metropolitan urban forest (2019)	This policy outlines recommendations to focus vegetation and canopy cover expansion efforts in various land use contexts. This includes greening in new precincts and infrastructure developments to support cooling. It commits to the following: <ul style="list-style-type: none"> Increase urban canopy and understorey to achieve various targets across metropolitan regions. Increase greening in the private realm by strengthening planning and development standards. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by supporting urban heat island mitigation strategies in structure planning.
	Built Environment Climate Change Adaptation Action Plan 2022-2026 (2022b)	This policy supports cooling and greening objectives to support climate resilience in the built environment. It commits to the following: <ul style="list-style-type: none"> Update planning schemes to include new provisions to reduce urban heat exposure, including targets and standards such as minimum tree canopy cover. 	<ul style="list-style-type: none"> Closely aligns with the SRL vision by supporting greening as an urban heat island mitigation strategy through the planning scheme.
	Better Apartments Design Guidelines – Victoria (2023)	This policy supports the implementation of the Better Apartment Design Standards with guidance on landscaping and open space requirements to support canopy trees, plants and other greenery that help to make cities cooler. It commits to the following: <ul style="list-style-type: none"> Supports landscaping standards on material specifications to lower surface temperatures and reduce heat absorption. 	<ul style="list-style-type: none"> Aligns with the SRL vision by providing standards for higher-density development to enhance cooling in the private and public realm.
	Council Policy	Monash Urban Landscape and Canopy Vegetation Strategy (2018)	This policy proposes measures to increase tree canopy cover as the primary UHI mitigation technique that contributes to community health and wellbeing now and in the future.
Monash City Council Zero Net Carbon Action Plan 2020-2025 (2020)		This policy outlines a pathway for Council to become carbon neutral by 2025. In addition to climate change mitigation initiatives, the plan proposes partnership opportunities with universities to identify urban heat island reduction opportunities.	<ul style="list-style-type: none"> Aligns with the SRL vision by mitigate urban heat island effect. Identifies the role of partnerships to drive change. Opportunity to extend impact through planning provisions that drive specific performance outcomes.

Policy	Title	Summary	Delivery alignment
Planning scheme	Building Design	<p>Clause 15.01-2S:</p> <ul style="list-style-type: none"> ▪ Includes a strategy to ensure development provides landscaping that responds to its site context, enhances the built form, creates safe and attractive spaces and supports cooling and greening of urban areas. 	<ul style="list-style-type: none"> • Aligns with the SRL vision to encourage landscaping around buildings that supports cooling and greening of urban areas. • However, the impacts of policy strategies are limited because supported outcomes are encouraged, but not mandatory.
	Environmentally sustainable development	<p>Clause 22.13 (Monash):</p> <ul style="list-style-type: none"> • Includes strategy to provide environmentally sustainable landscapes and natural habitats, and minimise the urban heat island effect. • Encourage the retention of significant trees and the planting of indigenous vegetation. 	<ul style="list-style-type: none"> • Aligns with the SRL vision to encourage vegetation to mitigate urban heat islands. • Under the BESS credit scoring, more points are available if the percentage of the site that is vegetated is increased. • There are no minimum requirements and no mandatory minimum pass scores for urban ecology. • BESS encourages green roofs and green walls and facades, but these are not mandatory. • BESS also does not include any metrics or credits for solar reflective materials or canopy tree coverage.



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