

CHAPTER 09

SUSTAINABILITY AND RESILIENCE

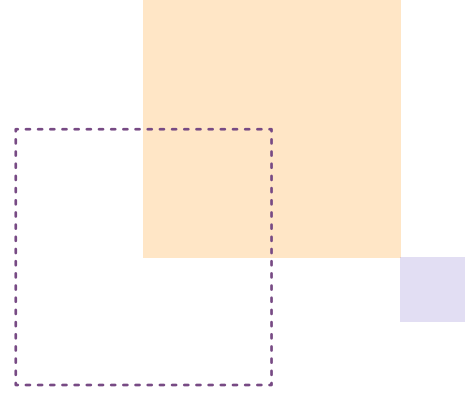


Plan Melbourne Outcome 6:
Melbourne is a sustainable and
resilient city

Plan Melbourne recognises the need to mitigate greenhouse gas emissions, reduce exposure to natural hazards, undertake whole of water cycle planning and design, and protect local waterway corridors. It also encourages resource efficiency and promotes the benefits of urban cooling and greening.



Photo credit: Tim Bell Studio



Although heatwaves have a greater negative impact on population health than any other climate-related issue, the Northern Metro Region will also experience lower average annual rainfall and more frequent extreme rainfall events (DELWP, 2018b).

Coupled with urbanisation, increased temperatures and drier weather conditions (on average) will also put additional pressure on drinking water supplies and natural assets such as creeks, river corridors, parks and vegetation.

Responding to climate challenges and finite resources must be a central pillar of planning for liveable, vibrant, sustainable and resilient communities and environments, and reducing climate risk in the Northern Metro Region.

State of play

Energy networks

Melbourne’s energy grid is transforming. The city’s future grid will have a greater ability to export energy from individual properties or a local area, presenting a more flexible approach to energy production. It will be smarter, more reliable and provide greater energy security. Regional energy generation and storage is also a potential option, and the region’s green wedge areas could provide an opportunity to support these facilities subject to environmental and landscape considerations.

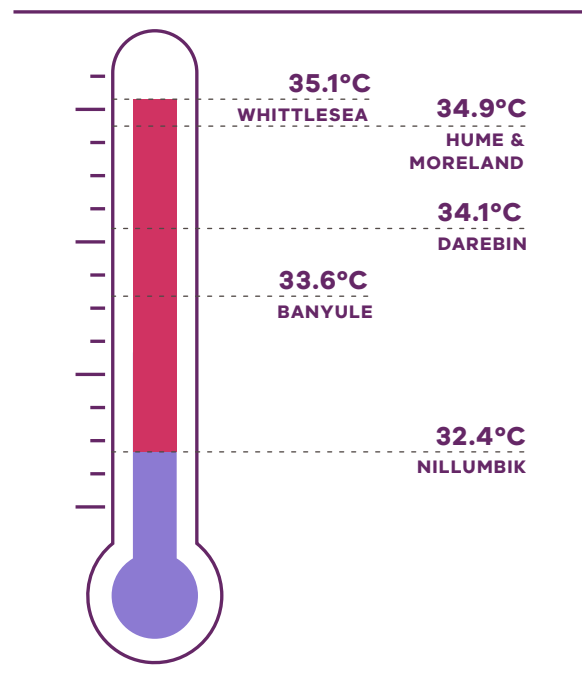
Urban heat environments

By 2050, the average daily maximum temperature for the Northern Metro Region is forecast to increase between 0.7° Celsius and 2.6° Celsius under a medium emissions climate scenario (Clarke, et al., 2019). As our climate warms, the number of people exposed to the risk of mortality from heatwaves will increase. In 2018, it is estimated that around 131,000 residents in the Northern Metro Region were exposed to high urban heat conditions (Ulrich & Hardy, 2020), particularly in inner areas and growth area communities.

In 2018, the average land surface temperature (LST) in the Northern Metro Region was 34.4°C – 0.5°C greater than the average LST for metropolitan Melbourne (DELWP, 2018d). LST was highest in Whittlesea LGA (35.1°C) and coolest in Nillumbik LGA (32.4°C) (Figure 21). The combination of

higher-density living, less trees and more hard surfaces means inner suburbs, along with Hume LGA, are exposed to higher urban temperatures during extreme and prolonged heat events (Figure 22). Older people, young children, people with underlying health issues and those with fewer resources to adapt are more at risk on hot days and in prolonged periods of hot weather.

FIGURE 21. Average land surface temperature by LGA, 2018



Source: Department of Environment, Land, Water and Planning (2018) *Land Surface Temperature Data, State of Victoria, Melbourne, Australia.*

There are a variety of urban environments across the Northern Metro Region creating different urban heat outcomes. Inner, higher-density suburbs retain heat and are hotter during periods of hot weather. They have fewer canopy trees, more hard surfaces and greater levels of urbanisation than outer suburbs. Conversely, the region also features significant waterway corridors and areas with high levels of tree canopy which are cooler during periods of hot weather. This means individual suburbs perform differently and provide different levels of amenity on hot days.



FIGURE 22. Heat vulnerability index map for the Northern Metro Region, 2018

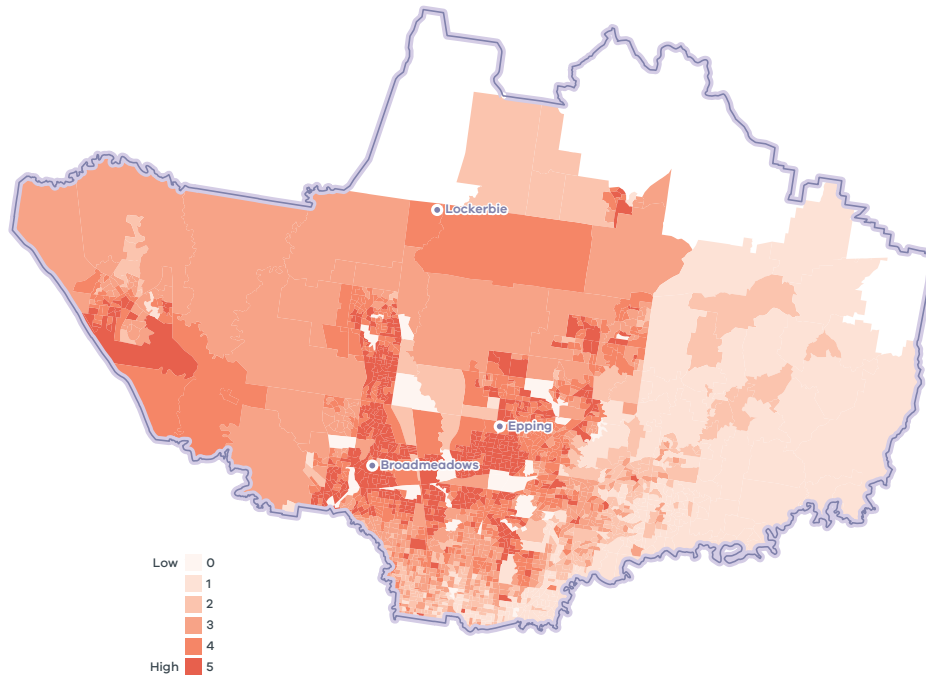
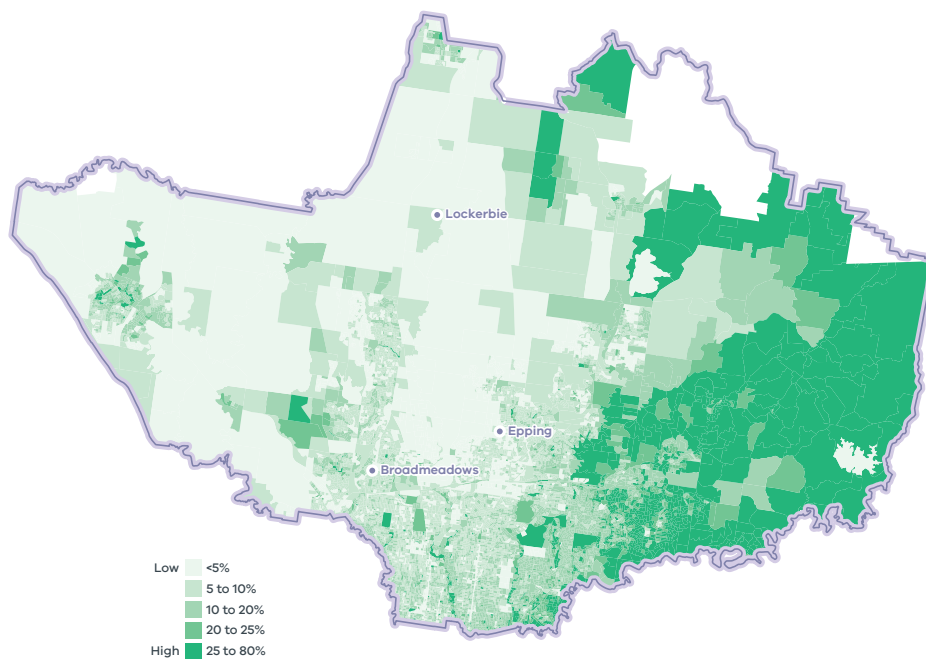


FIGURE 23. Northern Metro Region tree canopy cover 2018



As the frequency and duration of hot days increases, so too will the need for future urban environments to actively reduce heat and improve comfort – not only to support outdoor leisure and recreation, but also to reduce the likelihood of heat-related illness.

Active urban environments, characterised by higher-density development and limited physical space for canopy trees, will need to become ‘cooler urban environments’. These environments will need to apply a range of alternative measures to reduce urban heat, including water sensitive urban design (WSUD) to increase soil permeability and provide passive irrigation to landscaped areas, heat-reflective materials on building roofs and walls, shade structures to protect windows and open spaces, and alternative landscaping to maximise limited space such as roof gardens and green walls. The balance of land in less-dense urban environments must become ‘green areas’, where additional drought-tolerant vegetation is introduced, particularly canopy trees on both private and public property to provide shade and shelter.

Urban tree canopy

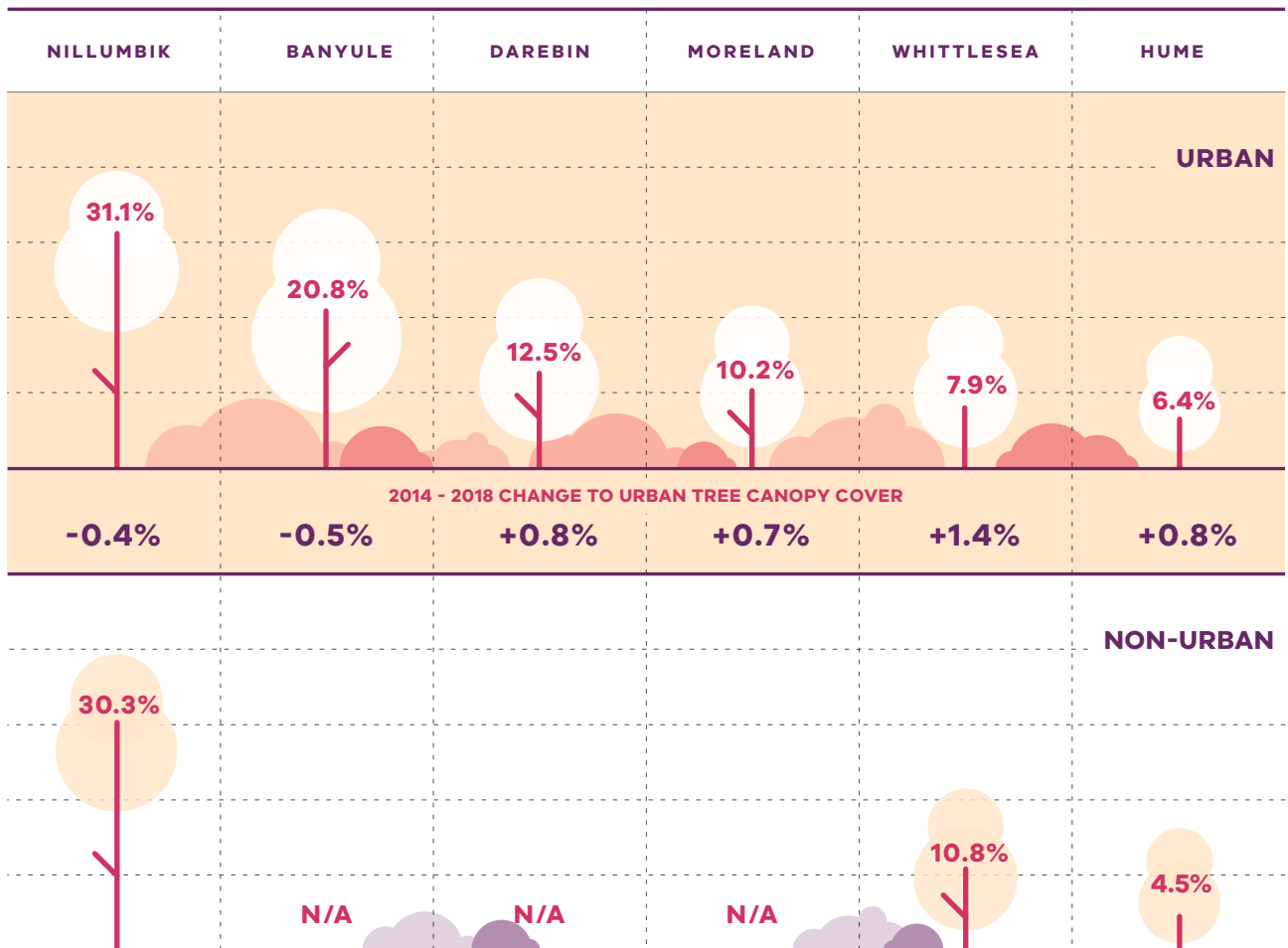
Across the Northern Metro Region tree canopy plays an important role in maintaining our water supply catchments, providing habitat and contributing to the character of parks and green wedges. In urban areas, trees also provide cooling, amenity, recreation and respite to residents. In 2018, the Northern Metro Region had 12.1 per cent of urban tree canopy cover which was lower than the metropolitan average of 15.3 per cent (Hurley, et al., 2019a). Tree canopy varies across the region. There are areas of greater coverage to the north-east of the region and along waterway corridors. Nillumbik LGA has the highest urban tree canopy coverage of 31.1 per cent while Hume LGA has the lowest urban tree canopy cover of 6.4 per cent (Figure 24).

Across the Northern Metro Region most of the urban tree canopy is on residential land, parkland and linear infrastructure such as roads (Figure 25). This is due in part to large areas of land being used for residential and transport purposes.



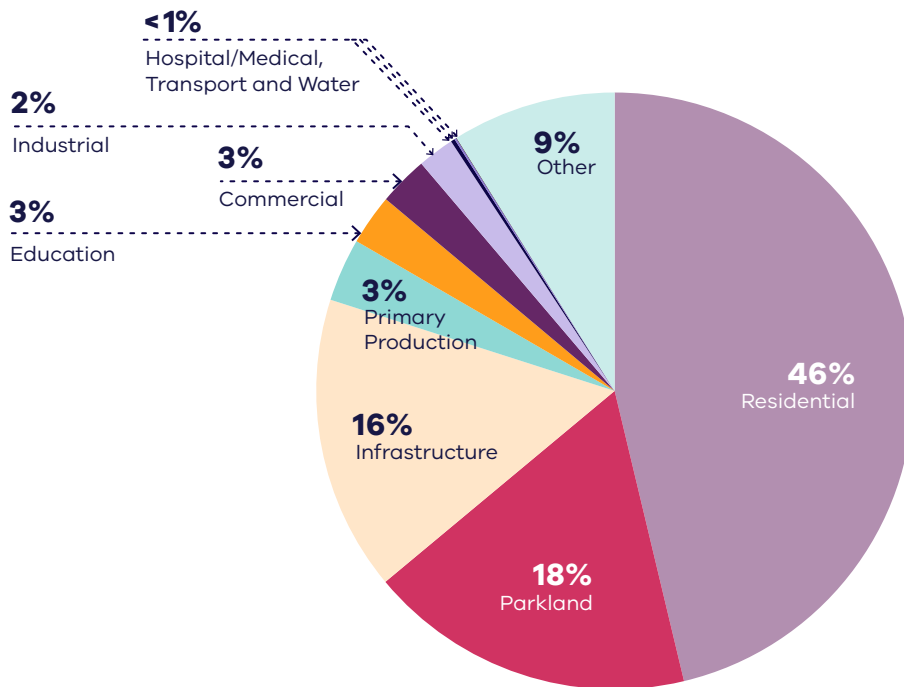
Photo credit: Tim Bell Studio

FIGURE 24. Tree canopy cover 2018, and tree canopy cover change 2014 to 2018, by LGA



Source: Hurley, J., Saunders, A., Amati, M., Boruff, B., Both, A., Sun, C., Caccetta, P., and Duncan, J. (2019) *Melbourne Vegetation Cover 2018, Northern Region*, Department of Environment, Land, Water and Planning, Melbourne, Australia.
 Hurley, J., Saunders, A., Both, A., Sun, C., Boruff, B., Duncan, J., Amati, M., Caccetta, P. and Chia, J. (2019) *Urban Vegetation Cover Change in Melbourne 2014 - 2018*, Centre for Urban Research, RMIT University, Melbourne, Australia.

FIGURE 25. Urban tree canopy cover by land use, 2018



Source: Hurley, J., et al. (2019) Melbourne Vegetation Cover 2018, Northern Region, Department of Environment, Land, Water and Planning, Melbourne, Australia.

Natural hazards – flooding and bushfire

Stormwater flooding is prevalent in urban areas of the Yarra and Maribyrnong catchments in the Northern Metro Region. Higher volumes of stormwater during periods of heavy rain impact the health of rivers and their tributaries. While overall annual rainfall will reduce, the region is forecast to experience more frequent and intense rainfall events that will increase the risk of flooding as a result of climate change (DELWP, 2018c). Flooding may also be exacerbated by an increase in impervious surfaces and stormwater flows unless the risk is properly managed.

Inner areas of the Northern Metro Region, such as Darebin, Moreland and Banyule LGAs, have a high flooding risk. Conversely, outer areas of the region such as Nillumbik and Whittlesea LGAs, which have large urban and rural interfaces and high vegetation cover, have a high risk of bushfire (NAGA, 2014).

Resource efficiency and waste and resource recovery

In 2013-14 Greater Melbourne had a 73 per cent resource recovery rate, with 805,000 tonnes of food and garden waste sent to landfill. By 2042, it is projected waste volumes will grow by 63 per cent to

16.5 million tonnes each year. The most significant landfill in the Northern Metro Region, the Hanson Landfill in Wollert has all relevant approvals in place to meet forecast capacity, as does an inert landfill in Bulla (Metropolitan Waste and Resource Recovery Group, 2016).

Sustainability in the built environment

In 2013, residential buildings were responsible for nearly 12 per cent of Australia’s national greenhouse gas emissions, and commercial buildings contributed just over 11 per cent. The majority of these emissions were generated through the consumption of grid-supplied electricity to power appliances, lighting, and predominantly heating, ventilation and cooling (HVAC) systems (Australian Sustainable Built Environment Council, 2016).

As average temperatures rise due to climate change, greater numbers of people are expected to seek comfort indoors during periods of hot weather. This, combined with population growth and overall poor-performing building stock, means our city lacks energy efficiency and resilience on hot days. Maximising opportunities to incrementally improve the performance of buildings will reduce our reliance on appliances to cool buildings and contribute to a lower likelihood of blackouts during periods of hot weather.

Local councils within the Northern Metro Region are active in adopting policies and strategies to reduce carbon emissions and improve the sustainability of the built environment. Many are innovators and leaders in Environmentally Sustainable Development (ESD) and are implementing new practices to improve the energy efficiency of civic buildings and reduce emissions from operations.

Several LGAs are members of the Council Alliance for a Sustainable Built Environment (CASBE), an association committed to designing and applying a range of practical methodologies to increase sustainability outcomes for new buildings. The Built Environment Sustainability Scorecard (BESS) is an online tool developed by CASBE that assesses the sustainability of proposed developments. It aims to reduce waste and improve energy efficiency from the outset of the construction phase, through to occupation. As well as onsite energy generation, BESS promotes the use of energy-efficient appliances, thermally-efficient glazing, wall cladding and insulation, water-efficient fittings and fixtures, thermal comfort and overall environmentally sustainable performance.

Other rating systems being increasingly utilised by the building design industry to measure and assess the performance of ESD principles include Green Star (Green Building Council of Australia, 2021), NatHERS (Department of Industry, Science, Energy and Resources, 2021) and MUSIC (eWater, 2021).

Regional strengths

- The region has extensive natural assets and a well-established tree canopy, particularly in the north-east and parts of the green wedges.

Regional challenges

- Flooding poses a risk to people, property and infrastructure.
- Some urban areas have a low tree canopy and heat vulnerable communities.
- There are bushfire risks to the community, infrastructure and high-value native ecosystems at the urban-rural interface.
- There is a need for a new resource recovery centre and transfer station to advance resource efficiency and recycling.

Directions and strategies

The directions identified to achieve the 2050 vision for the Northern Metro Region in terms of Sustainability and resilience and Outcome 6 of Plan Melbourne are:

Direction 24	Respond to the transformation of the energy supply network
Direction 25	Increase the network of cool places, particularly in areas with communities vulnerable to urban heat and areas with high urban heat
Direction 26	Increase urban tree canopy across the Northern Metro Region to achieve 27 per cent coverage by 2050
Direction 27	Increase the retention and reuse of water in the urban environment
Direction 28	Minimise and reduce risk from bushfire in Nillumbik, Whittlesea, Hume and Mitchell
Direction 29	Protect sites of strategic importance for recycling and plan for the expansion of key sites for future resource recovery needs

Each direction is implemented through regionally-specific strategies identified in this LUFFP.






Map 10 shows how sustainability and resilience will be enhanced across the Northern Metro Region by 2050 as a result of these directions and strategies, together with Plan Melbourne and other strategies and initiatives as outlined in **Appendix 01**.







Photo credit: Tim Bell Studio

MAP 9. Northern Metro Region sustainability and resilience state of play

Precincts and Activity Centres

-  National employment & innovation cluster (NEIC)[^]
-  Metropolitan activity centre
-  Metropolitan activity centre (future)
-  Major activity centre
-  Major activity centre (future)






Transport

-  State-significant road corridor
-  Road network
-  Train station
-  Rail network

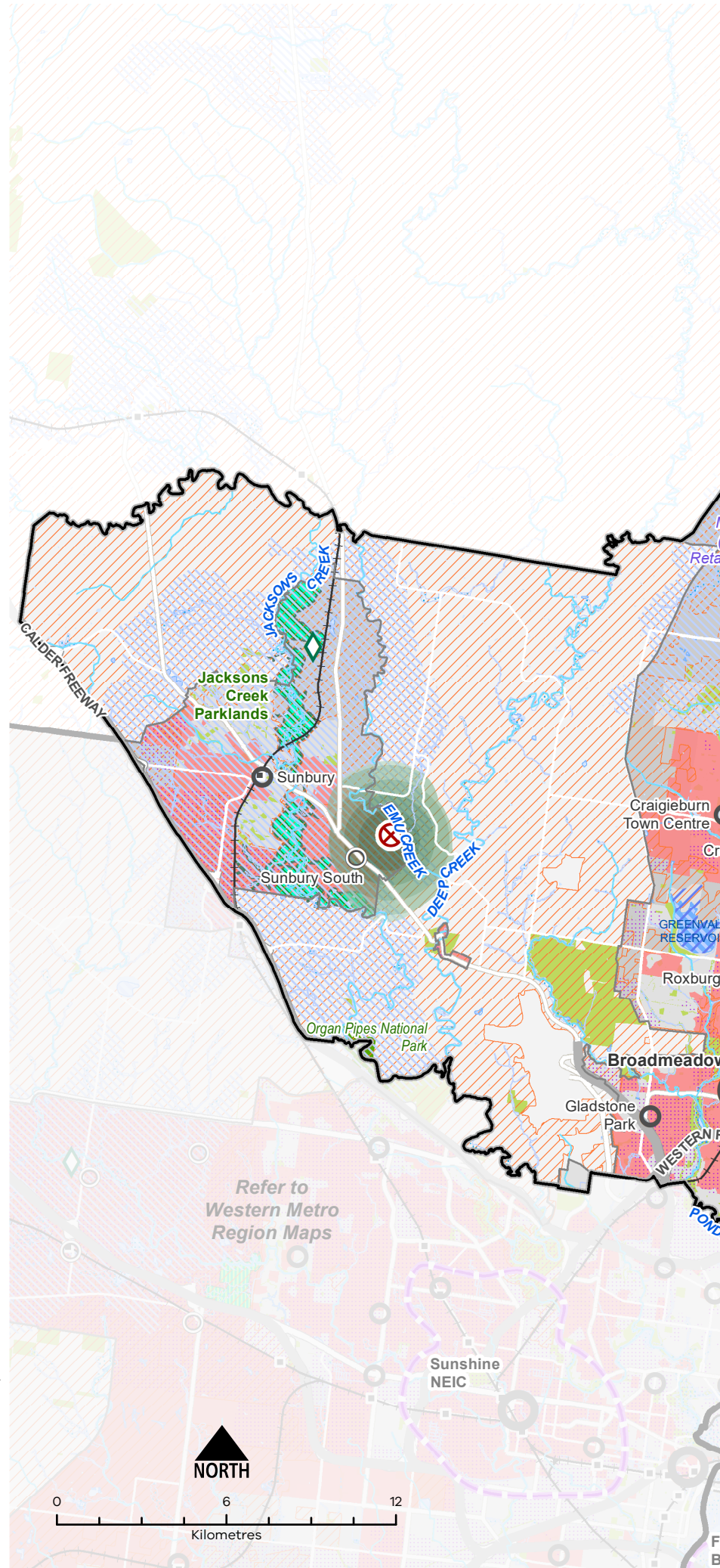
Environment

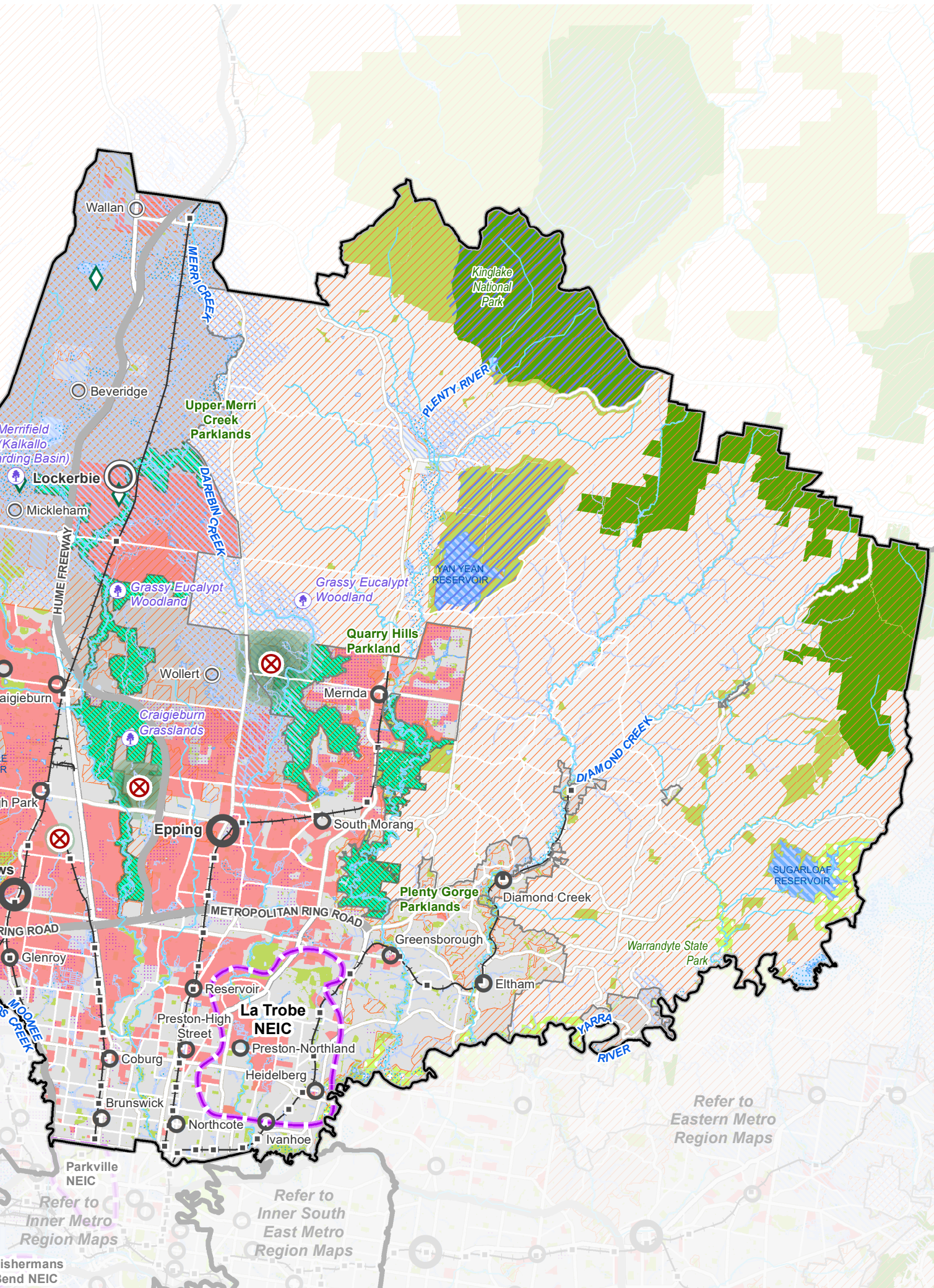
-  Conservation reserve - proposed
-  National park/state park
-  Regional park - expanded/improved
-  Future regional active open space
-  Public open space
-  Yarra River land
-  Wetlands
-  Waterway
-  Areas subject to flooding (existing planning controls)
-  Priority stormwater sub catchments
-  Water supply catchment (closed & uninhabited)
-  Waste facility
-  Reservoir
-  Waterbody
-  Bushfire risk area (Bushfire Management Overlay + bushfire prone area)
-  High heat vulnerability areas (HVI >3)
-  High land surface temperatures

Land use/Administration

-  Regional boundary
-  Urban growth boundary
-  Growth area
-  Urban area
-  Green wedge land




[^]NEIC boundary is indicative only and subject to detailed planning.









MAP 10. Northern Metro Region sustainability and resilience 2050








Precincts and Activity Centres

-  National employment & innovation cluster (NEIC)*
-  Metropolitan activity centre
-  Major activity centre




Transport

-  State-significant road corridor
-  Road network
-  Train station
-  Rail network






Environment

-  National park/state park
-  Public open space
-  Yarra River land
-  Waterway
-  Areas subject to flooding (Melbourne Water)
-  Priority areas for enhanced stormwater management
-  Priority waterways for enhanced vegetation
-  Water supply catchment (closed & uninhabited)
-  Reservoir
-  Waterbody
-  Waste facility

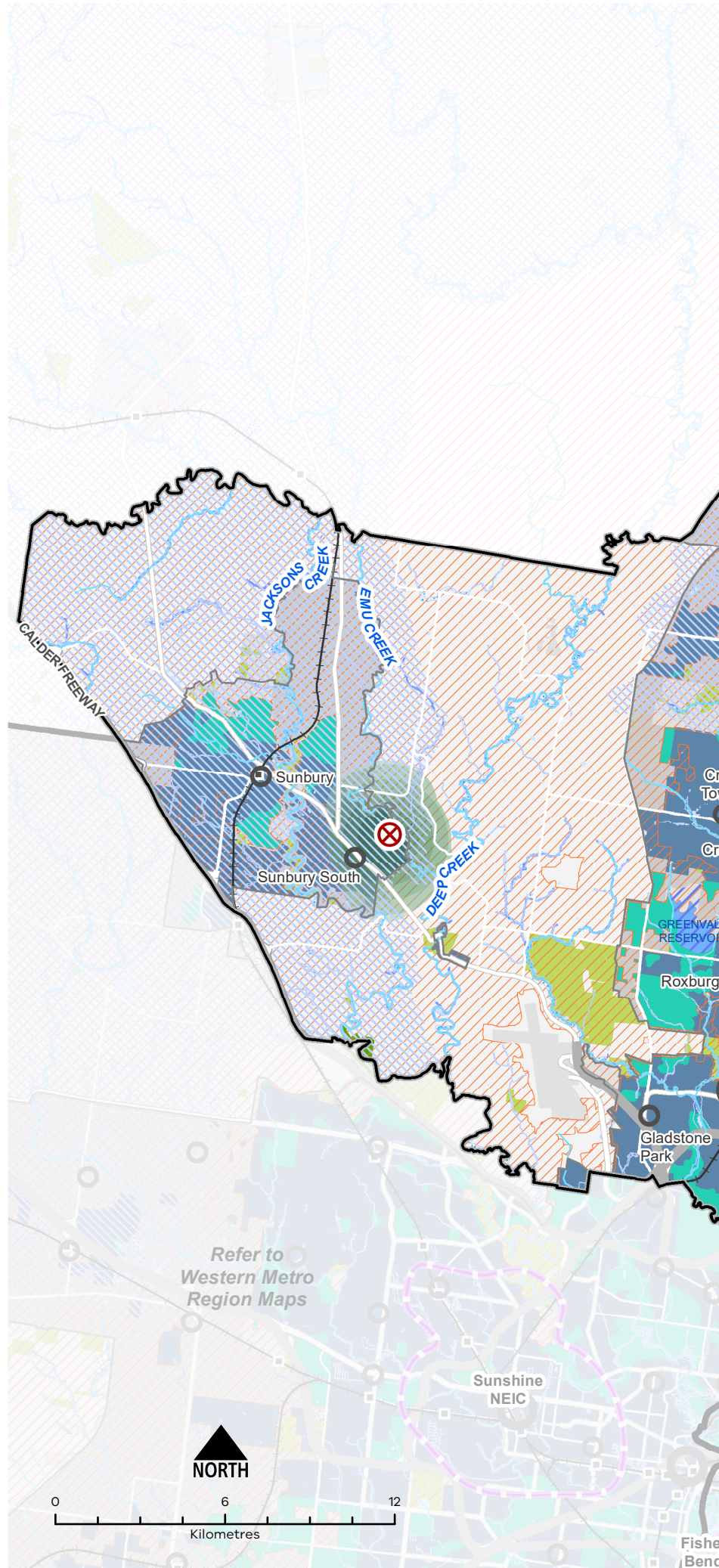
Environment

-  Bushfire risk area (Bushfire Management Overlay + bushfire prone area)
-  Priority - urban heat response
-  Priority - expand urban tree canopy cover

Land use/Administration

-  Regional boundary
-  Green wedge land
-  Growth area
-  Urban area
-  Urban growth boundary

*NEIC boundary is indicative only and subject to detailed planning.



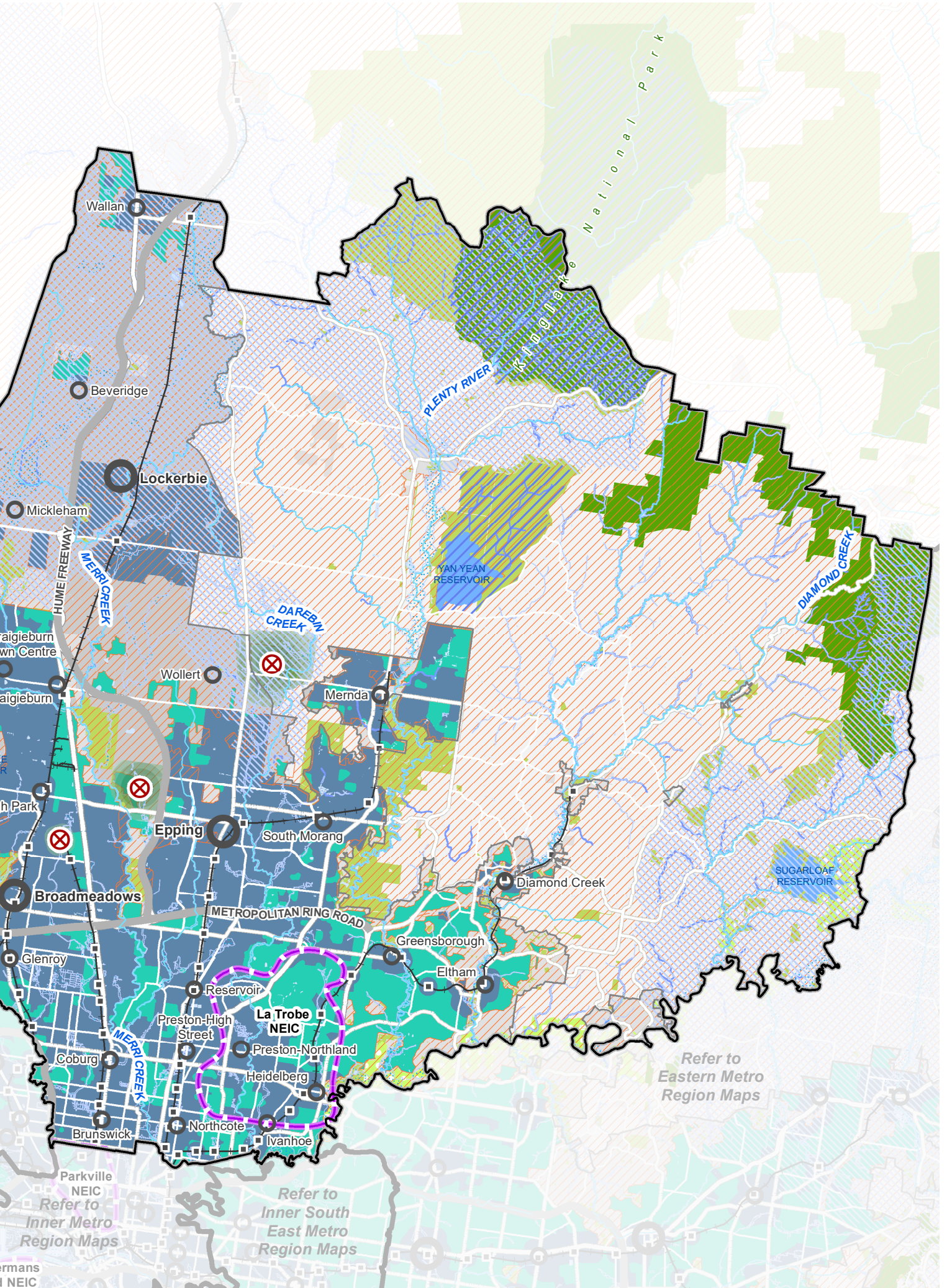
Refer to Western Metro Region Maps

Sunshine NEIC

NORTH

0 6 12
Kilometres

Fisher Bend



DIRECTION 24.**Respond to the transformation of the energy supply network**

In an increasingly decentralised energy system, future electricity networks will need to be responsive to changing demands from traditional services while enabling new opportunities for energy resource sharing and balancing. Millions of customers in Melbourne generate electricity, and over time they will store electricity too. These customers will be connected to the network and each other, enabling energy networks to act as platforms that match supply and demand and reduce the need for inefficient duplication of energy investments.

Large subdivisions, growth area development and urban renewal in the Northern Growth Corridor and large urban renewal areas should be planned to support this future energy network and avoid the need to retrofit energy infrastructure.

STRATEGY 79. Ensure subdivision and growth area development can support the emerging energy supply network.

DIRECTION 25.**Increase the network of cool places, particularly in areas with communities vulnerable to urban heat and areas with high urban heat**

More tree canopy cover, permeable surfaces and water in the urban environment will help reduce urban temperatures and create comfortable local micro-climates in the Northern Metro Region.

Plan Melbourne notes that temperature decreases of between 1° Celsius and 2° Celsius can have a significant impact on reducing heat-related morbidity and mortality (DELWP, 2017a). Major activity centres and higher-density areas would benefit from a 'cooling' approach while lower-density areas would benefit from a 'greening' approach.

In addition to trees, green walls, shade structures and low heat absorbing materials can help reduce urban surface temperatures. These techniques will be important in inner areas of the region, activity centres, La Trobe NEIC, and around education and recreation facilities which have areas of high urban heat. Land uses frequented by older people and children will need to provide for more active cooling of outdoor environments.



Photo credit: Tim Bell Studio

Buildings with vegetation and roof gardens will need to be combined with onsite water harvesting and storage to ensure vegetation health and reduce potable water demand.

Epping, Broadmeadows and Lockerbie metropolitan activity centres have communities vulnerable to urban heat, along with Brunswick, Coburg, Preston (High Street), Reservoir, Glenroy, Gladstone Park, South Morang, Roxburgh Park, Mernda, Craigieburn and Sunbury major activity centres. These communities are at a higher risk of heat-related illness during periods of multiple hot days (Sun & et al., 2019).

As shown in Figure 22, there are also large areas of high urban surface temperatures in the suburbs to the north and south of the Metropolitan Ring Road and suburbs around the Hume Freeway which absorb and retain heat.

STRATEGY 80. Design and develop outdoor spaces that are cool on hot days through materials, vegetation and water sensitive urban design in:

- Broadmeadows, Epping, and Lockerbie metropolitan activity centres
- Coburg, Preston (High Street), Reservoir, Glenroy, Gladstone Park, South Morang, Roxburgh Park, Mernda, Craigieburn and Sunbury major activity centres
- Locations with high urban heat vulnerability and high urban heat.

STRATEGY 81. Encourage green roofs and green structures with climate resilient planting and irrigation on apartment developments, particularly in areas with high urban heat and large commercial and industrial sites.

DIRECTION 26.

Increase urban tree canopy across the Northern Metro Region to achieve 27 per cent coverage by 2050

Trees provide an essential service to the surrounding environment. In the absence of water, trees and in particular clusters of trees, make the greatest contribution to reducing surface temperatures, along with contributing to stormwater infiltration and amenity and biodiversity outcomes (Coutts & Tapper, 2017) (Sun & et al., 2019).

These important functions are vital for sustainability and resilience as our climate warms and the Northern Metro Region's population grows.

All local councils in the region have adopted the *Living Melbourne Urban Forest Strategy (2019)*. This strategy specifies targets for the Northern Metro Region of 27 per cent total tree canopy and 39 per cent total tree and shrubs canopy by 2050.

The target of 27 per cent tree canopy coverage by 2050 is accompanied by an aspirational distribution of tree canopy across land uses to guide action in the Northern Metro Region (Table 14).

A key challenge for increasing tree canopy is the ability to retrofit existing urban areas for green infrastructure due to the availability of public and private space and the multiple functions of public land and publicly accessible places. For example, there are potential conflicts with electrical powerlines, underground cabling, gas and stormwater pipe works and regulation, and transport movement (Banyule City Council, 2014). Tree planting will need to avoid remaining areas of natural treeless grassland as these are some of the most precious remaining natural assets in the region.

The Greening the North program has recently been established between government departments, agencies and other stakeholders to coordinate and accelerate greening across the Northern Metro Region.

Most of the Northern Metro Region's growth is expected to be accommodated in and around activity centres and areas with good access to existing services and transport infrastructure. Some of these sites will be less able to accommodate trees and a broader range of cooling and greening methods will be required.

Outside these locations are urban areas that are not as well located to infrastructure. In these locations, private land can retain more trees while development can provide higher levels of planting. In bushfire interface areas, planting should be managed so that it responds to potential bushfire risk.

While some locations will be more constrained, tree planting may yield greater co-benefits, such as reducing urban temperatures, local climate regulation and stormwater benefits. Areas where many people are exposed to high urban heat environments, as well as areas with high surface temperatures in inner suburbs, should be a priority (refer to Priority Urban Heat Response areas in **Map 10**). Other priority locations for planting are activity centres and points of access to the PPTN.

Infrastructure, such as streets, rail corridors, new arterial roads and large at-grade car parks can play a multi-purpose role for both movement and greening to help achieve urban forest targets. Relocating powerlines underground in key locations should be considered to maximise the urban tree canopy. Transport corridors such as the Metropolitan Ring Road and Hume Freeway, as well as railway lines, also provide an opportunity to increase tree canopy.

All Northern Metro Region LGAs have endorsed the *Living Melbourne: Our Metropolitan Urban Forest* strategy, specifying a regional target of 27 per cent total tree canopy and 30 per cent combined tree canopy and shrubs by 2050 (The Nature Conservancy and Resilient Melbourne, 2019). To support this commitment, the tree canopy target is accompanied in **Table 14** by an aspirational distribution of tree canopy cover across four different land use types, adapted by DELWP from several related datasets (Hurley, et al., 2019a) (Ulrich & Hardy, 2020) (PSMA Australia Limited, 2021).

TABLE 14. Northern Metro Region tree canopy cover target and aspirational distribution

2018 TREE CANOPY COVER: 12.1%	
2050 TREE CANOPY COVER TARGET: 27%	
(+14.9% OR +8,505 HECTARES ADDITIONAL TREE CANOPY COVER)	
Residential, commercial, industrial and primary production	55%
Streets, roads and rail	20%
Parks, open space and waterways	20%
Education and hospital/medical	5%

STRATEGY 82. Retain more trees on private land outside locations identified for higher levels of housing and mixed-use change.

STRATEGY 83. Increase tree canopy across the Northern Metro Region to 27 per cent coverage by 2050. Priority locations for this to be achieved are:

- Areas with high urban heat vulnerability in the Northern Growth Corridor
- High urban heat locations in Moreland, Hume, Whittlesea and Banyule LGAs
- Urban waterways and open spaces.

DIRECTION 27.**Increase the retention and reuse of water in the urban environment**

Integrated stormwater management, reducing runoff into waterways and wetlands, and water recycling will improve climate resilience and liveability. The Northern Metro Region is predicted to be 59 per cent more impervious within the next 50 years (Melbourne Water, 2018). This will increase rapid runoff and flooding, and negatively affect water quality and the health for aquatic life.

While some areas of the region are subject to flooding overlays, such as the Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO), there is an opportunity to increase stormwater and floodwater harvesting capabilities. This is particularly important in developing urban centres where impervious surfaces and flooding can increase the risk and cost of property and infrastructure damage (DELWP, 2018c).

Urban stormwater management and water harvesting is needed in the Northern Metro Region to manage flooding risk to property and infrastructure, and to support green infrastructure.

Local stormwater capture, water recycling and greywater systems will improve the region's hydrological and ecological systems, along with restoration and revegetation of urban waterways, and WSUD in public realm projects, particularly in open spaces and new residential subdivisions.

Harvesting stormwater and increasing water infiltration is important in dense suburbs to reduce runoff and service vegetation. Harvested stormwater can help maintain water-reliant facilities and amenities such as sporting fields and gardens, contribute to more resilient vegetation, reduce demand on drinking water and improve the receiving environment of streams and rivers. Development can reduce the impacts of flooding, support healthy vegetation and prepare for drying conditions by increasing permeable areas, increasing proportions of green space, avoiding paved areas and passively irrigating vegetation.

Development also increases the quantity of wastewater generated in urban areas, which provides another opportunity to diversify water sources. For example, wastewater can be recycled and used to irrigate public open space and sporting grounds. This will help improve water security as the climate warms and overall rainfall decreases. Further, wastewater contains nutrients and organic matter that could be used to create valuable products such as fertilisers and energy sources. Given increasing limits in resource availability, this creates an opportunity to expand the benefits of wastewater management by exploring different options for resource recovery.

The Victorian Government's strategies *Water for Victoria* and *Integrated Water Management Framework for Victoria* provide the strategic framework for water management in Victoria. At the regional scale, options to increase the retention and reuse of water in the urban environment should be based on the actions contained in the *Yarra and Maribyrnong Catchment Scale Integrated Water Management Plans*, flooding strategies, relevant sub-catchment integrated water management plans (including the Sunbury and Upper Merri Creek plans), and local council integrated water management plans.

These plans should be used as the basis to support governments and relevant agencies to prioritise and align water infrastructure needs and deliver integrated water management outcomes. This may include the preparation of appropriately-scaled integrated water management plans (i.e. sub-catchment, precinct or local scale) by the lead planning authority in collaboration with relevant referral agencies to guide sustainable water design and development decisions.

STRATEGY 84. Retain and harvest stormwater in priority sub-catchments and inner suburbs of the Northern Metro Region.

STRATEGY 85. Support the development of water sensitive neighbourhoods through precinct planning and IWM plans.

STRATEGY 86. Support opportunities to deliver alternative water supply to green wedges to provide for agriculture and minimise extraction from natural waterways.

DIRECTION 28.
Minimise and reduce risk from bushfire in Nillumbik, Whittlesea, Hume and Mitchell

Heavily vegetated environments in Nillumbik and Whittlesea LGAs and grassland areas in Hume and Mitchell LGAs pose significant bushfire risks for the region (Map 9). The need to plan for the risk of bushfire to communities, infrastructure and natural environments will continue to increase as the climate warms and overall rainfall decreases.

The likelihood of forest fires and grassfires, and their severity and intensity, depends on a site's location and the surrounding landscape. State planning policy for bushfire (Clause 13.02) and the Bushfire Management Overlay (BMO) already applies to large areas of the Northern Metro Region, mostly beyond the urban area. The BMO aims to strengthen community resilience to bushfire by considering bushfire measures as part of building design and ensuring new development achieves an acceptable level of bushfire risk. However, there is a need to strengthen the resilience of settlements and communities to bushfire through strategic, risk-based regional planning that prioritises the protection of human life over other policy considerations.

In order to prioritise the protection of human life from bushfire, population growth and development should be directed to low-risk locations and areas that are safely evacuated. Development within areas of the highest bushfire risk must achieve acceptable levels of risk reduction. These areas should be avoided for development that will accommodate more vulnerable populations, such as the elderly or very young, that may have difficulties evacuating in the event of a bushfire.

Careful management of vegetation and water resources will be required across the Northern Metro Region in response to bushfire risk. River and creek corridors will continue to be important as the climate warms to provide habitat, recreation and cooling. However, given their higher levels of vegetation, they will also pose bushfire risk. Vegetation management strategies, including selecting lower risk species and maintaining vegetation, will have a key role in mitigating risk in urban areas while recognising the value of these corridors for habitat and urban cooling.

STRATEGY 87. Avoid housing growth and sensitive land uses within and in proximity to bushfire prone areas of Nillumbik, Whittlesea, Hume and Mitchell LGAs.

STRATEGY 88. Provide new and upgraded regional social infrastructure that provides refuge in extreme bushfire and weather events.

STRATEGY 89. Recognise and manage bushfire risk posed by vegetation within waterway corridors.

DIRECTION 29.**Protect sites of strategic importance for recycling and plan for the expansion of key sites for future resource recovery needs**

The *Statewide Waste and Resource Recovery Infrastructure Plan 2018* (Sustainability Victoria, 2018) and the *Metropolitan Waste and Resource Recovery Implementation Plan 2016* aim to increase resource recovery across Victoria. The metropolitan plan identifies the need for a Resource Recovery Centre and Transfer Station in the Northern Metro Region of 17,000 to 43,000 tonnes per annum capacity by 2031-2040 (Metropolitan Waste and Resource Recovery Group, 2016).

Waste and resource recovery hubs provide essential services to support waste and recycling for Victorian communities. There are four existing waste and resource recovery hubs of state importance for metropolitan Melbourne in the Northern Metro Region (Sustainability Victoria, 2018). They are:

- **Hanson Landfill Wollert:** A significant putrescible and solid inert landfill serving the metropolitan and neighbouring regions with the potential to operate over the long term. The Wollert landfill is well located and close to major transport routes (Sustainability Victoria, 2018)
- **Cooper Street precinct, Epping:** Compatible activities could provide additional resource recovery activities and markets for the recovered goods (Sustainability Victoria, 2018)
- **Cleanaway (formerly SKM) Materials Recovery Facility (MRF), Coolaroo:** Largest material recovery facility in Victoria, accepting commingled recyclable streams from metropolitan and regional areas likely to continue in current role for the foreseeable future.
- **Veolia Organics Facility Bulla:** Major hub undertaking a range of waste and resource recovery activities including composting organics and asbestos and demolition disposal (Sustainability Victoria, 2018).

Waste and resource recovery hubs and facilities require buffers and protections to minimise impacts on communities, the environment and public health. There is also a need to support compatible land uses in and around the hubs and to identify adequate land and appropriate locations for future resource recovery infrastructure (Sustainability Victoria, 2018).

Waste and resource recovery hubs can provide significant opportunities to leverage benefits and facilitate investment in recycling facilities. Opportunities to develop hubs include co-location

of industries that have synergies with waste and resource recovery facilities, increasing economies of scale or co-locating industries requiring similar buffers, creating jobs and increasing volume of materials recovered (Sustainability Victoria, 2018). Development of a strategic plan for the Cooper Street Precinct hub has commenced, with similar plans due to be developed for other hubs by the Metro Waste and Resource Recovery Groups.

Successful recycling in Victoria requires markets for recycled products. Infrastructure projects throughout the region can contribute to strengthening these markets and reducing the environmental impact by using more recycled products and less virgin materials.

STRATEGY 90. Protect and buffer the Wollert landfill, Coolaroo MRF and Bulla waste and resource recovery hubs of state importance.

STRATEGY 91. Maintain adequate buffers and provisions to protect the Cooper Street precinct and Wollert waste and resource recovery hub from residential encroachment and incompatible land uses and preserve the importance of the hubs for the long term.

STRATEGY 92. Ensure zoning can support complementary land uses to locate in and around the Cooper Street, Wollert landfill and Bulla waste and resource recovery facilities of adequate size and location to provide additional capacity for the Northern Metro Region.

ACTIONS – Sustainability and resilience

ACTION 15. Prepare a regional bushfire response for suburban and peri-urban communities that are subject to bushfire risk.

ACTION 16. Investigate options and land use protection for a Resource Recovery Centre and Transfer Station/s to support Melbourne's future resource and recovery needs.