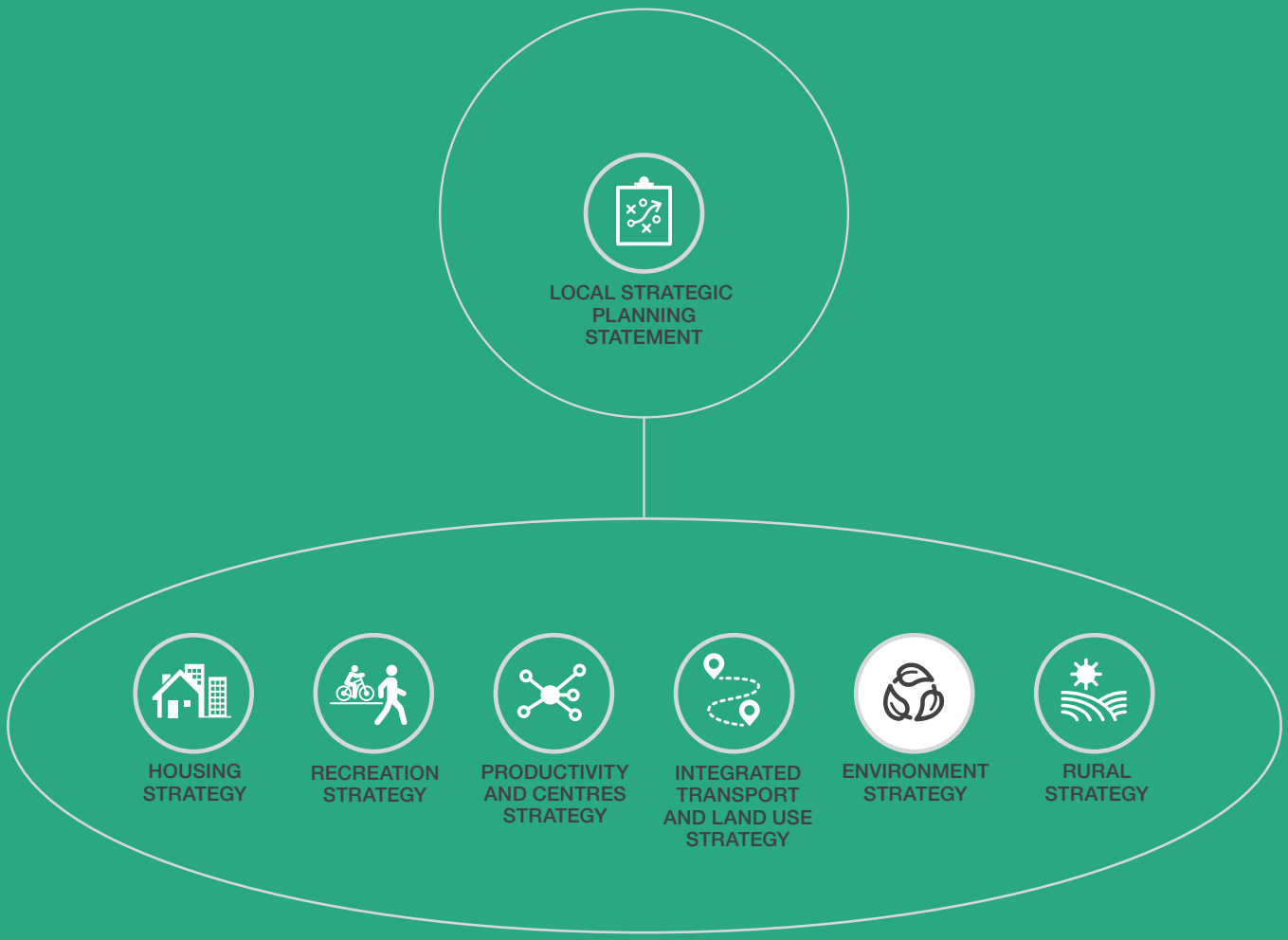
ATTACHMENT N

ENVIRONMENT STRATEGY

The Hills Shire Council | October 2019

THE HILLS
Sydney's Garden Shire



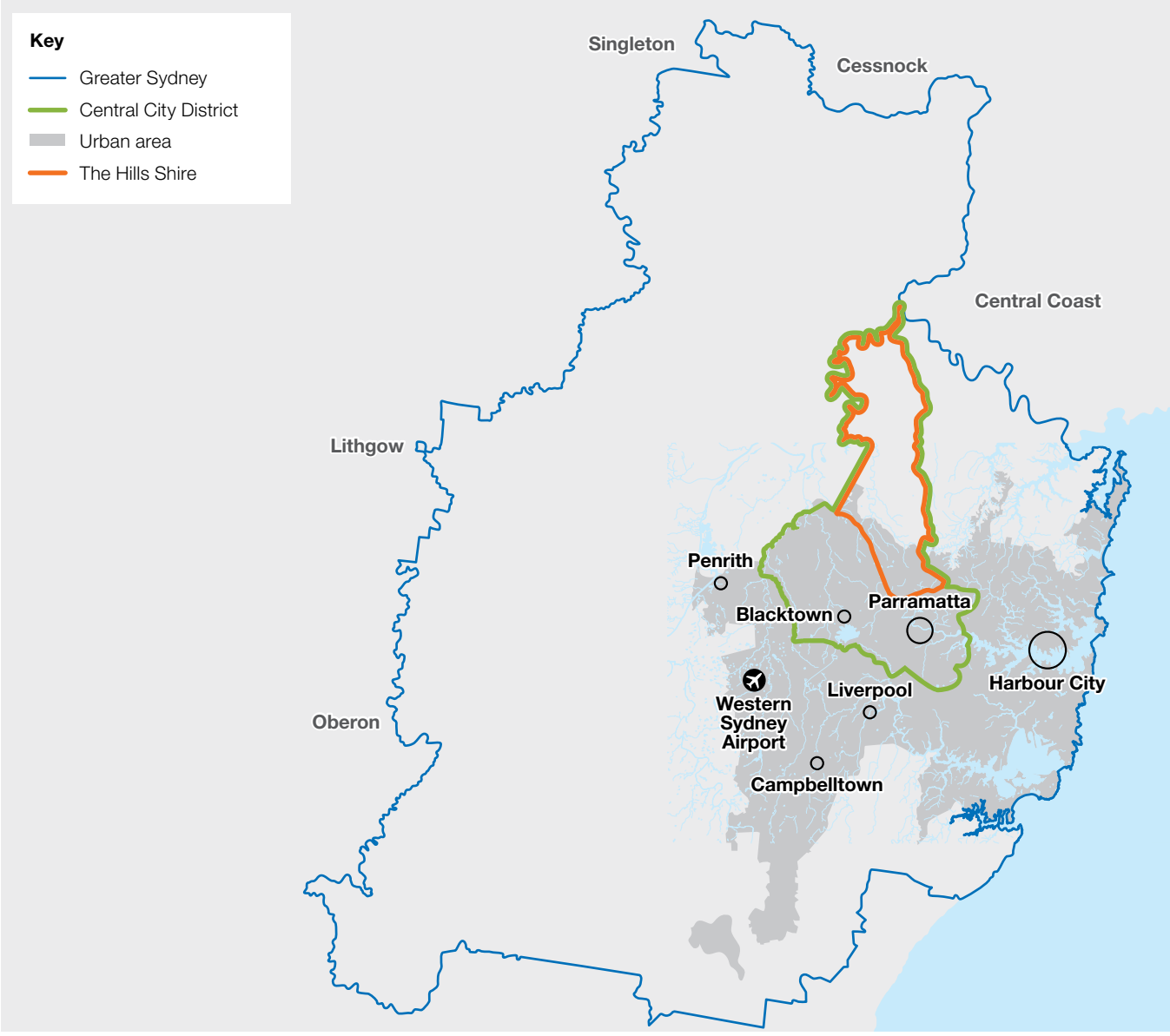
The *Environment Strategy 2019* was adopted by Council on 22 October 2019, Minute No.565.

This document represents the collaboration of information from a number of sources, including NSW Government plans and policies and plans and policies of The Hills Shire Council.

The Hills Shire is a local government area (LGA) in the north west of Greater Sydney, around 30 kilometres from Sydney CBD. Spanning 38,500 hectares, it forms part of the Central City District, along with the Blacktown, Cumberland and City of Parramatta LGAs. The Shire includes land between Baulkham Hills and West Pennant Hills in the south, to Wisemans Ferry in the north.

The Hills Shire was home to approximately 162,500 people in 2016. We are planning for an 80 per cent increase in population by 2036, with the population of 290,900 people needing a mix of housing, access to services, shopping and public transport, and opportunities to connect with each other, with nature and with the rest of Greater Sydney.

While connected to the Central River City, centred around Parramatta, The Hills has strong links to the Eastern Harbour City and will grow connections to the future Western Parkland City and the Aerotropolis around the planned Western Sydney International Airport.



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Executive summary

The Hills Shire is proud of its 'Garden Shire' image. Protecting the natural environment will give future generations the opportunity to benefit from the area's unique blend of urban and natural environments.

A substantial portion of the Shire is covered by vegetation, waterways and wetlands, some of which is used as open space. Both public and privately-owned land contributes to the preservation of areas of significant biodiversity that support 81 known threatened species, populations or habitats, including four critically endangered and eight endangered ecological communities listed in the *Biodiversity Conservation Act 2016* (NSW).

The Shire covers 38 major water sub-catchments draining to the Hawkesbury-Nepean, South Creek and Upper Parramatta river catchments via more than 900 kilometres of natural and constructed waterways. The Shire also contains 52 kilometres of Hawkesbury River frontage from Cattai Creek, in Cattai, to the ferry crossing at Wisemans Ferry. The Shire's 30,000 hectares of bushfire-prone land is located in rural and urban areas. In addition, the Shire contains approximately 6,450 flood-affected lots.

The significant growth in the Shire's population to 2036 and the associated increases in density in some locations will place pressure on natural resources. The Shire's residents, on average, produce 10.49 tonnes of carbon emissions each year, just below the Greater Sydney average, mainly from electricity and transport use; and, on average, use up 226 litres of fresh water every day, slightly above the Greater Sydney average of 210 litres.

Looking to the future with a greatly increased population, we need to be proactive and smart as we seek to reduce the Shire's impact on the natural environment, while also avoiding the creation of waste, reducing our resource consumption and being as efficient as possible in disposing of waste.

Most growth is expected to occur on greenfield land in existing urban release areas and around Sydney Metro Northwest stations. This will translate to an increase in high density dwellings. The development of high density areas presents challenges for environmental and waste management, and planning.

Beyond this, our approach to environmental protection and management is based on identifying environmentally sensitive lands through our land use planning framework and decision-making processes.

We have developed this *Environment Strategy 2019* around four planning priorities that themselves reflect the planning priorities of our Local Strategic Planning Statement *Hills Future 2036*. These priorities are:

- **protecting areas of high environmental value and significance**, through the land use planning system, continued use of rural cluster subdivisions, and community involvement, including support for the Shire's 31 Bushcare groups
- **increasing urban tree canopy cover**, to improve the character of local places while addressing urban heat island effect, through master planning and urban design, and our ongoing Street Tree Planting program
- **managing natural resources and waste responsibly**, through mechanisms that protect the Shire's waterways and wetlands, reduce water and energy use and waste generation, and move towards innovative approaches
- **preparing residents for environmental and urban risks**, by improving the planning framework to address bushfire and flooding risks, urban heat island and extreme weather, and pollution.

As the overall strategic approach to protecting and managing the Shire's natural environment, *Environment Strategy 2019* also supports the commitments in our Community Strategic Plan, as expressed in the Hills Shire Plan, as well as the objectives of the higher-level *Central City District Plan* and *Greater Sydney Region Plan*.

1

INTRODUCTION

This *Environment Strategy 2019* focuses on the Shire's biodiversity and natural resources, and how we can protect, enhance and live safely within a natural environment while reducing our water and energy use, and waste generation

Our planning occurs in the context of a future population of 290,900 people by 2036 and the requirement for an additional 38,000 dwellings between 2016 and 2036.

This Strategy refreshes the *Environment and Leisure Direction* and the *Waterways Direction*, prepared in 2009, within the context of the *Greater Sydney Region Plan* and *Central City District Plan*.

Over the next two decades, waste generation will more than double within the Central City District, and the overall use of natural resources will rise. Bushfire, flooding and extreme heat also have the potential to impact residents and infrastructure within The Hills, now and in the future.

We need to be proactive and smart as we seek to avoid the creation of waste, reduce resource consumption and be as efficient as possible in waste disposal. We also need to be prepared for the risks associated with environmental hazards in both the rural area and, in particular, in the urban area.

1,375ha
Environmental Protection Land managed by Council

31
Bushcare groups supported by Council

Council cares for
4
Biodiversity stewardship sites

More than
900km
of natural and constructed waterways across 38 subcatchments

62,319
Plants propagated and planted by the Bidgiwong Community Nursery in 2017–18

4
critically endangered ecological communities, 2 critically endangered flora species

650ha
of environmentally sensitive land protected through Rural cluster subdivision

Purpose

The *Environment Strategy 2019* establishes the basis for strategic planning for, and management of, the Shire's environment to 2036. It informs the planning priorities and five-year actions in *Hills Future 2036*, our Local Strategic Planning Statement, and provides additional detail about how we will achieve our vision for a healthy environment that supports a vibrant community.

To shape exceptional living, working and leisure places where expected growth brings vibrancy, diversity, liveability and prosperity for The Hills.

Vision – Hills Future 2036

Achieving the vision will require collaboration with, and commitment from, all stakeholders including the community, the NSW Government, business and development industry to value, protect and manage the environment that supports new communities.

Our aim is to create a Shire in which the surroundings are valued, maintained and enhanced, and impacts are managed responsibly through education and regulatory action. We aim to encourage and educate Hills residents to live sustainably by facilitating resource recovery and minimising waste.

While Council activities help to improve the local environment, we cannot do it all. Educating businesses and residents about ways to lessen their environmental impact, as well as continuing to support volunteer programs such as Bushcare and the Community Environment Centre, will help to achieve our goals for the Shire's future.

Developing the Strategy

This *Environment Strategy 2019* complements the Hills Shire Plan, including the Community Strategic Plan, and will contribute to the theme of valuing our surroundings.

We have also considered the broader strategic context, prevailing trends, and likely demands on waterways and water use; protected environmental lands; natural resources and biodiversity; environmental risks; and the generation of waste and emissions.

In developing the Strategy we:

- reviewed NSW Government policies including the *Greater Sydney Region Plan*, *Central City District Plan* and *Future Transport 2056*
- reviewed the *Environment and Leisure Direction* and the *Waterways Direction* to confirm the status of work undertaken and determine any outstanding matters
- forecast population growth and assessed the likely implications for managing and protecting the environment
- identified opportunities to improve the state of the environment and to create a more sustainable environmental future.

Additional documents supporting this Strategy and *Hills Future 2036* are available from www.thehills.nsw.gov.au

2

STRATEGIC CONTEXT

Understanding the strategic context ensures effective implementation of priorities and actions.

We have a legislative obligation to implement the objectives and vision of NSW Government strategic directions and other policies, as well as an obligation to The Hills community to create a place where people want to live, work and play.

Figure 1: Links to the region and district plans

40-year vision
20-year plan

Greater Sydney
Economic, social and environmental context

20-year plan

District
Economic, social and environmental context

10+ year plan

Hills Shire
Economic, social and environmental context

Greater Sydney Region Plan

- Infrastructure and collaboration
- Liveability
- Productivity
- Sustainability
- Implementation

Central City District Plan

Planning priorities and actions

- Infrastructure and collaboration
- Liveability
- Productivity
- Sustainability
- Implementation

***Hills Future 2036* Local Strategic Planning Statement**

Informed by region and district plans and council planning strategies

- Housing
- Productivity and centres
- Rural
- Recreation
- Environment
- Integrated transport and land use

Local Environmental Plan

Community Strategic Plan

- **Vibrant Community Prosperous Economy**
- **Shaping Growth**
- **Deliver and Maintain Infrastructure**
- **Valuing our Surroundings**
- **Proactive Leadership**

Hills Future 2036 communicates how we will address the priorities and actions of the Region Plan and District Plan at a local level. It is supported by background strategies, including this one, undertaken in key areas to provide the vision for the future of The Hills Shire.

Figure 2: Hills Future 2036 and supporting strategies

We have reviewed the State and local strategic planning framework and recognise that The Hills Shire will be integral in Greater Sydney and will feature places for people, accessible and walkable neighbourhoods and a diverse supply of new housing in a setting which values the environment and recognises the role it plays in health and wellbeing. The key documents in this framework are:

State level

- *Greater Sydney Region Plan*
- *Central City District Plan*
- State planning instruments
- North West Rail Link Corridor Strategy.

Local level

- *Hills Future 2036*
- Hills Shire Plan, including the Community Strategic Plan
- The previous Hills Local Strategy
- The Hills Corridor Strategy
- Local planning instruments.

3

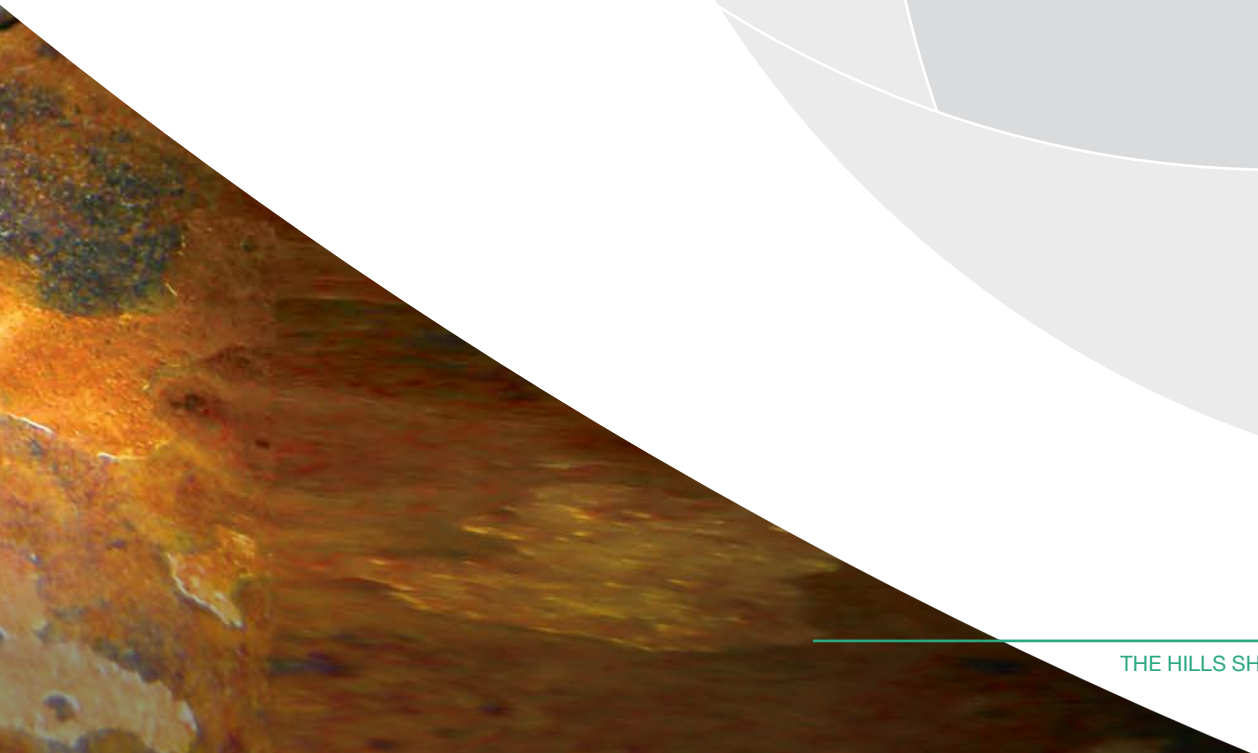
A UNIQUE ENVIRONMENT

The natural environment requires our protection and management. Not only does it provide vital habitat for plants and animals and green spaces for people to enjoy, it supports human life and prosperity. The World Wildlife Fund's Living Planet Index 2018 observed that nature underpins all economic activity, presently worth an estimated US$125 trillion on a global scale.

Closer to home, in 2016–17 the Australian Bureau of Statistics put the combined value of Australia's environmental assets at $6,412.8 billion. This includes land, minerals, energy and timber resources.

The Hills natural environment is unique within the Central City District. The community benefits from access to large tracts of intact wilderness, which is home to an abundance of rare and endangered flora and fauna, close to urban areas.

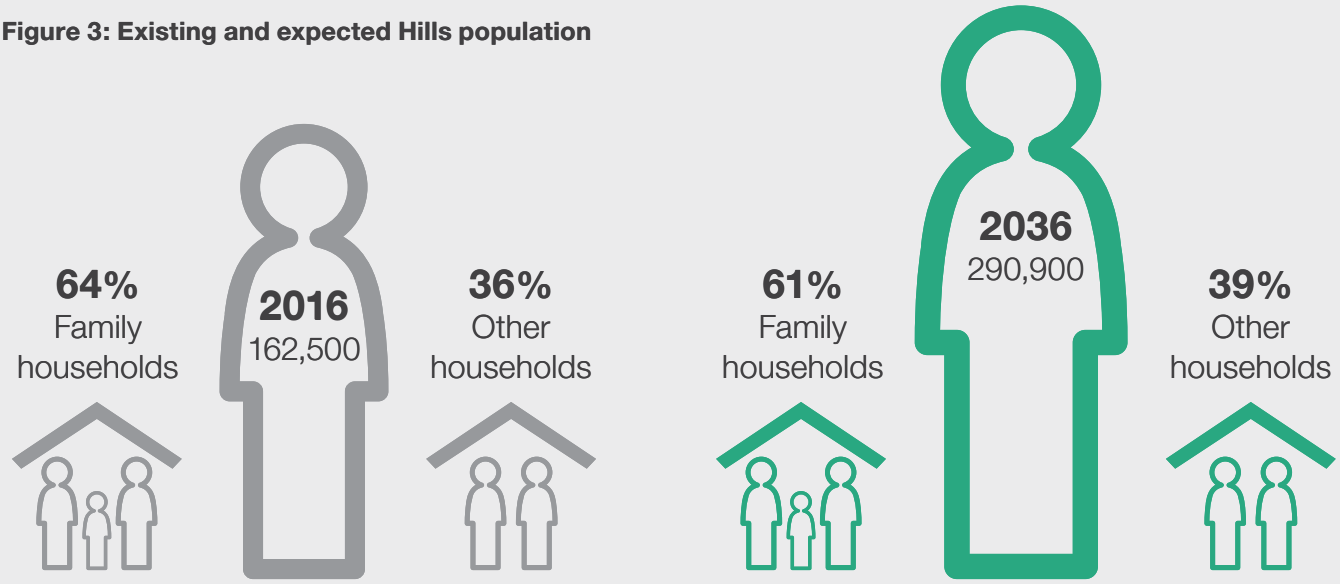
Communities all around the world face similar environmental issues and challenges. A coordinated response by governments, businesses, communities and individuals is required to respond to these challenges to ensure decisions made today do not adversely impact on the quality of life of future generations.



Growth in The Hills 2016 to 2036

POPULATION

Figure 3: Existing and expected Hills population



Source: NSW Department of Planning, Industry and Environment population forecast

Between 2016 and 2036, The Hills population will grow by around 80 per cent. Almost all of this growth will be contained within the Shire's urban areas, maximising efficiency of existing and planned infrastructure as well as minimising the impact on environmentally sensitive lands within the rural and northern parts of the Shire.

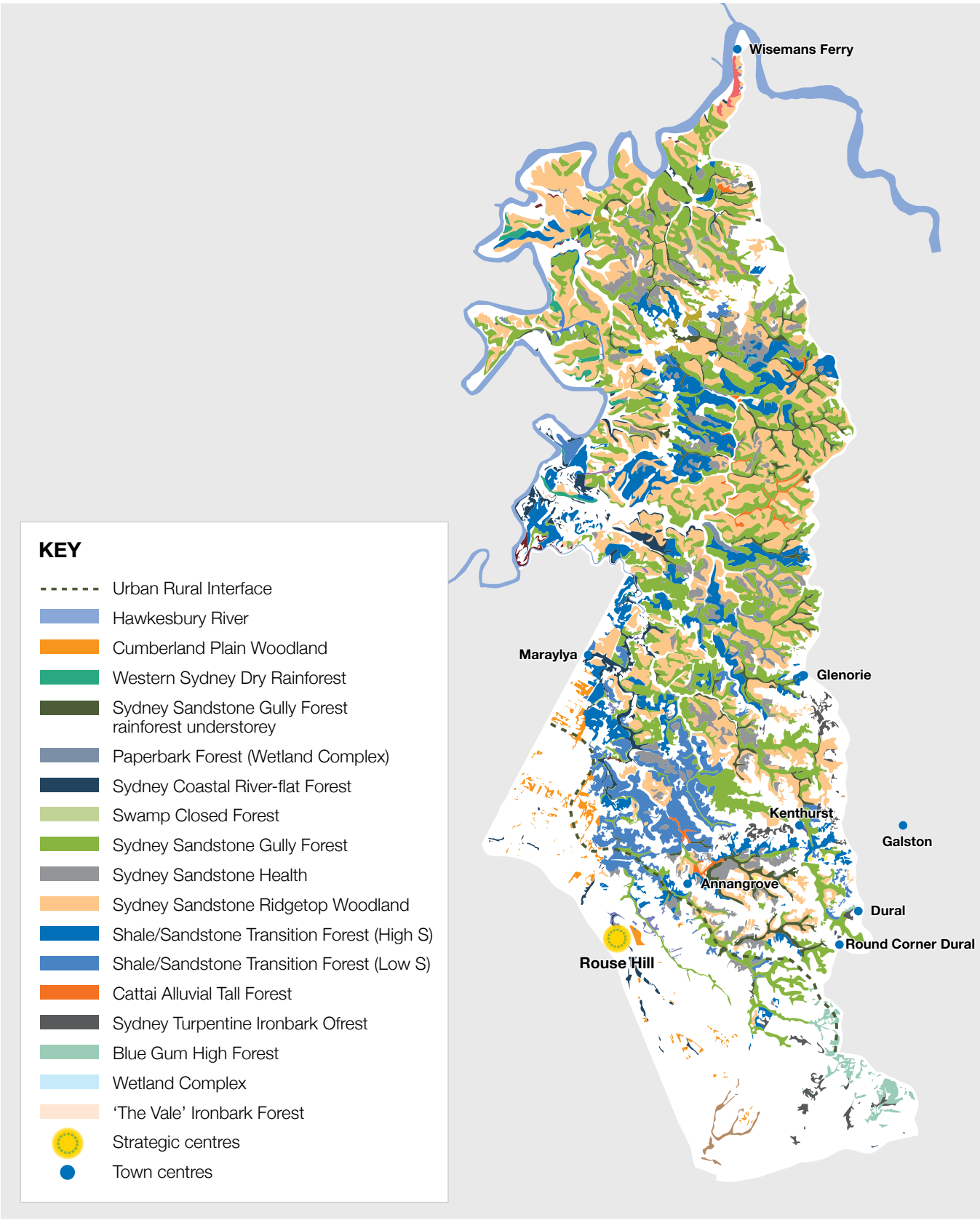
Biodiversity

To ensure the environment is healthy and can contribute to healthy lifestyles of residents, we need to maintain and improve the Shire's biodiversity where possible. This is best achieved by focusing on habitats and ecosystems.

A substantial portion of the Shire is covered by vegetation, waterways and wetlands, some of which is used as open space. Both public and privately-owned land contributes to biodiversity, including endangered ecological communities and threatened species.

> "The term 'Biodiversity' refers to the 'variety of all living things; the different plants, animals and micro-organisms, the genetic information they contain and the ecosystems they form."
>
> Australian Museum

Figure 4: Vegetation communities within The Hills Shire



The Hills Shire supports 81 known threatened species, populations or habitats, including eight endangered ecological communities and four critically endangered listed in the *Biodiversity Conservation Act 2016 (NSW)* – the Sydney Turpentine Ironbark Forest, Blue Gum High Forest, Cumberland Plain Woodland and Shale-Sandstone Transition Forest. A full list of threatened entities can be found in Appendix A.

The community is integral in maintaining and improving the biodiversity of the Shire. We support 31 bushcare groups as well as a Community Environment Centre in Annangrove. Bushcare volunteers work with some of the most vulnerable ecological communities in both urban and bushland environments.

The Community Environment Centre is run with the assistance of volunteers and offers onsite demonstration of water wise gardening and sustainable living, information and research materials, as well as facilitating community workshops and information sessions. The number of volunteers involved with the Centre has been steadily increasing in recent years, as has the number of people participating in environmental workshops (*The Hills Shire Council State of the Environment Report 2012–2017*).

Natural resources

Day-to-day comforts and amenities depend on energy derived from natural resources, including finite sources such as coal and oil, and renewable sources including solar and wind.

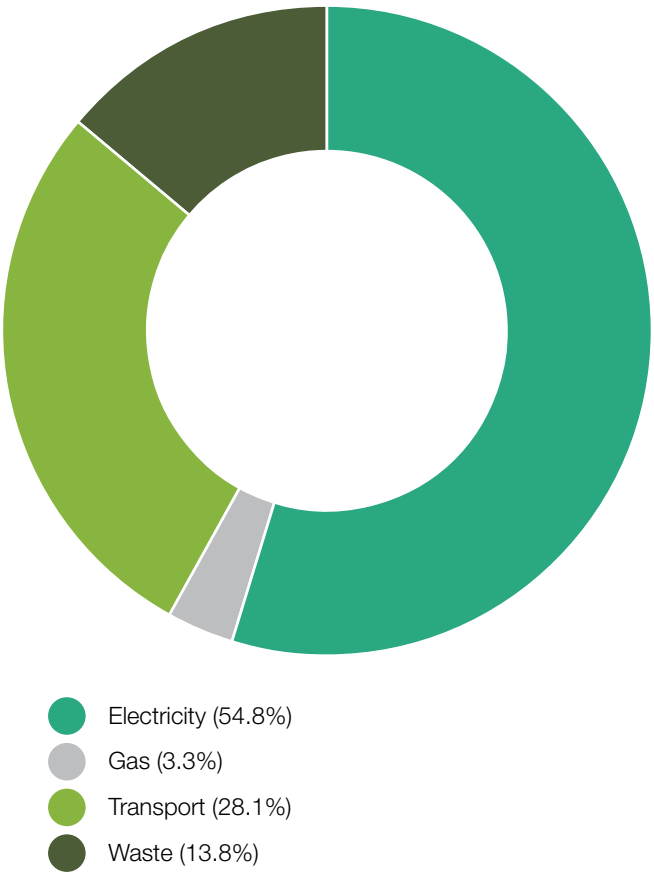
More and more households are adopting renewable energy sources including the installation of residential solar panels. Measuring carbon emissions and their sources enables us to gain an understanding of the use of natural resources.

Carbon emissions

Measuring carbon emissions provides an understanding of natural resource use. For the 2016–2017 financial year The Hills Shire produced approximately 1.65 million tonnes of carbon emissions, this is equivalent to an average of 10.49 tonnes per resident, slightly below the Greater Sydney average of 10.69 tonnes per resident.

Most emissions are attributed to electricity and transport use with most electricity emissions originating from detached family housing. This is reflective of The Hills long history of providing predominantly detached family housing on large allotments with limited access to public transport, leading to a reliance on private vehicle use. As the Shire grows and changes so too will its impact on the environment.

Figure 5: The Hills Shire carbon emissions by source 2016–17



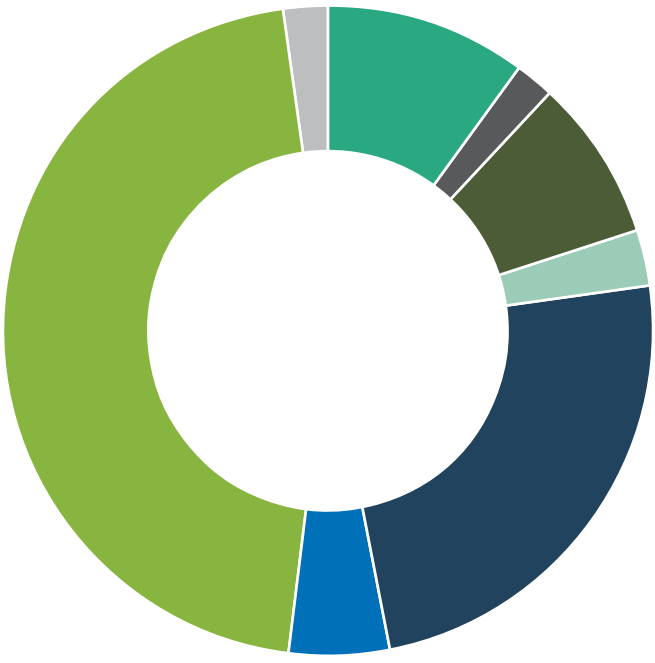
Source: Resilient Sydney 2019

Energy consumption

Rising energy costs and increasing demand on Council services and facilities present challenges in how we can continue to deliver the high standards of service the community expects.

Figure 6 provides a breakdown of energy use in the private sector in The Hills Shire. Residential detached dwellings make up the largest proportion of energy use; however, this is indicative of the significant amount of that housing type in the Shire, rather than it necessarily being a higher energy consumer than other development types. The average energy consumption per person for residential dwellings in The Hills Shire is 14,223 megajoules per annum, slightly above the Greater Sydney average.

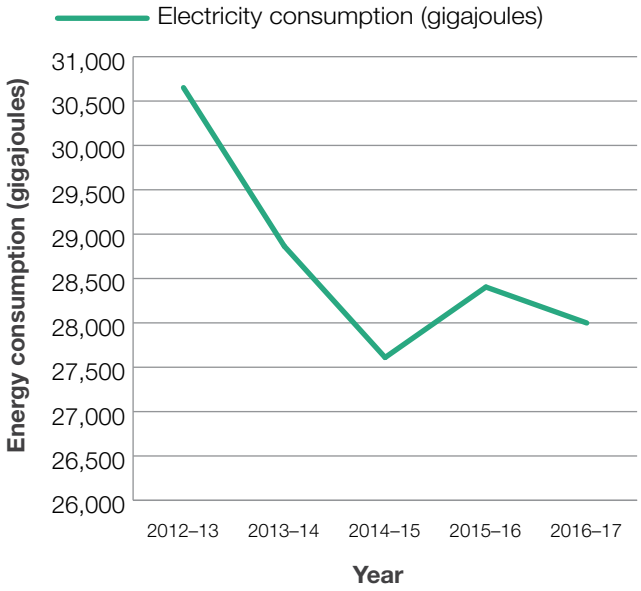
Figure 6: Energy use in The Hills Shire by sector 2016–2017



Source: Resilient Sydney 2019

We measure and manage energy consumption across our entire building and property portfolio. Using a range of technologies, we can monitor for changes in energy use to guide necessary improvements to reduce Council's use of natural resources.

Figure 7: Council's electricity consumption 2012–2016



Source: *State of the Environment Report 2012–2017*

We are actively reducing energy consumption and increasing the amount of renewable energy generated on Council-owned land and buildings. This includes the establishment of solar power-generating facilities. The Hills Shire Council administration complex consists of three separate four-storey office buildings and two car parking levels and is supported by a 98.7 kilowatt photovoltaic system that produces in excess of 130,000 kilowatt hours of electricity annually. Since 2012, an increasing proportion of these buildings' energy needs are provided by solar power.

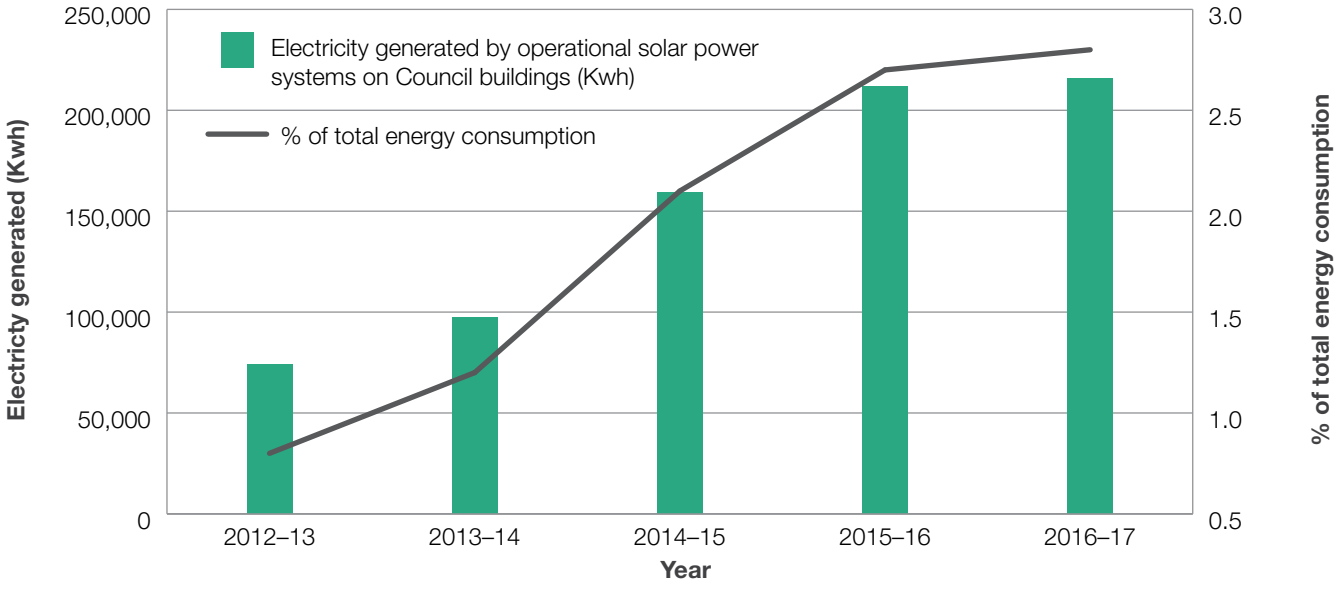
Solar panels on Council's administration building

The uptake of solar panels on private properties in The Hills is on the rise, with a

15.4%

increase from 2016–17 to 2017–18

Figure 8: Electricity generated by solar power on Council buildings



Source: *State of the Environment Report 2012–2017*

We hold workshops throughout the year on reducing energy use often in partnership with other providers, as well as providing information through our website. This will continue.

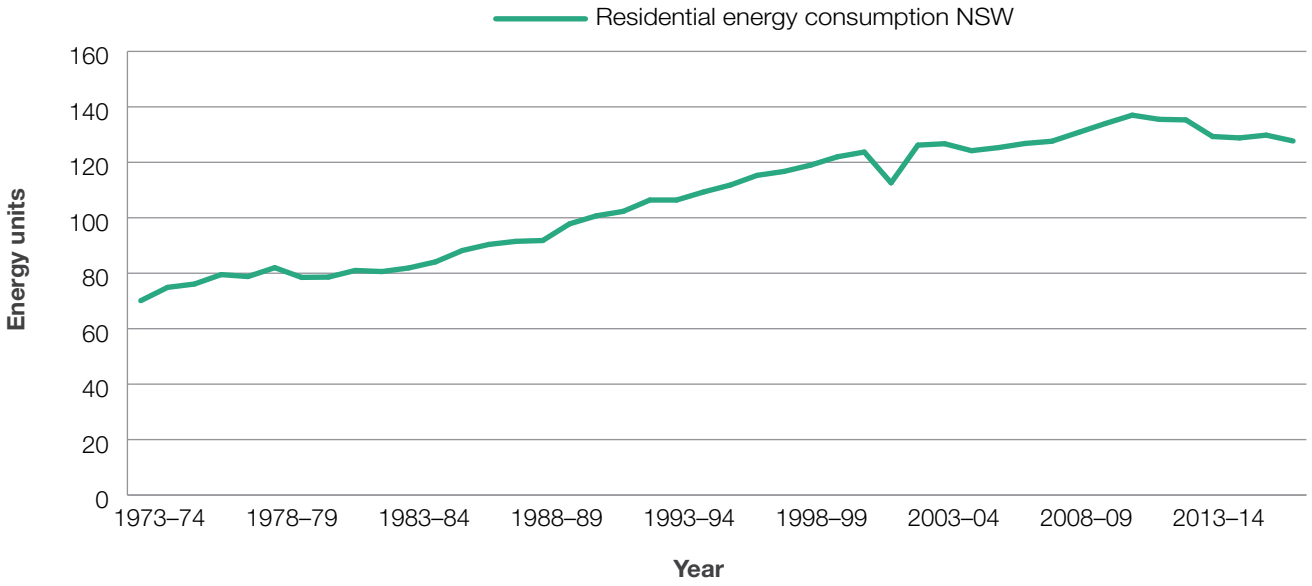
Other projects reducing energy consumption include:

- upgrading internal and external lighting to LED (light emitting diode) at several Council-owned facilities including libraries and community centres, as well as requiring LED lighting for sports fields
- installing instantaneous gas hot water systems
- introducing sports field lighting control via text-messaging in Glenhaven and Russell reserves
- installing carbon dioxide sensors and variable speed drives to car park exhaust and supply fans at the Castle Grand conference centre.

Generally, energy consumption across our facilities is decreasing, reflecting the success of these projects. Further projects are being developed and implemented across the Shire.

The Hills Shire trend towards reduced energy consumption reflects the overall trend across NSW which has seen a reduction in energy consumption rates per person since around 2010.

Figure 9: Residential energy consumption NSW

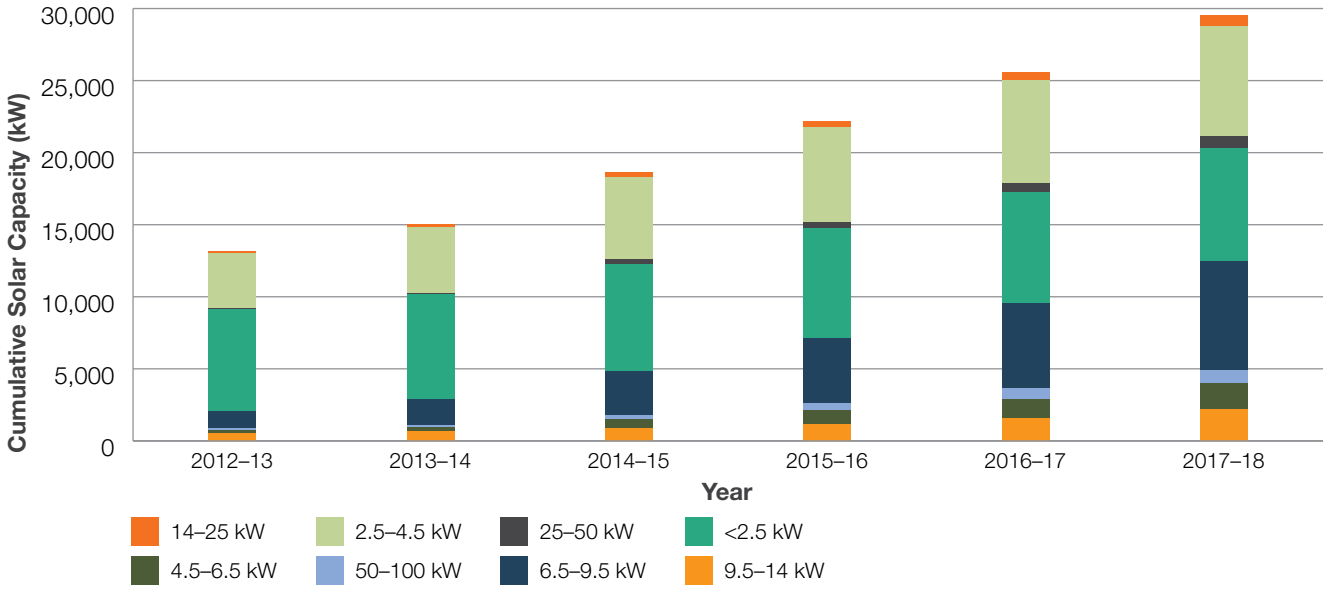


Source: Department of the Environment and Energy, *Australian Energy Update 2018*

The uptake of solar panels on private properties in The Hills is on the rise, with a 15.4 per cent increase from 2016–17 to 2017–18.

Transport emissions may also improve depending on the level of use of the Sydney Metro Northwest. These factors may result in a sustained reduction of emissions from these sources over the coming years.

Figure 10: Solar photo voltaic uptake



Source: Resilient Sydney 2019

Waste management

Waste management is a key responsibility of local government, and has social, environmental and economic impacts. Over the next two decades, waste generation will more than double within the Central City District. As consumers, all residents have an impact on the surrounding environment through the amount of waste generated, as well as how that waste is stored, transferred and disposed of. With an increasing population, Council needs to be proactive and smart as we seek to avoid the creation of waste, reduce resource consumption and be as efficient as possible in waste disposal.

The Environment Protection Authority is currently leading the preparation of a 20-year waste strategy for NSW, in partnership with Infrastructure NSW, to be completed in late 2019. We will seek to implement actions that result from this Strategy, as appropriate.

The Hills Shire average household weekly waste	23.19kg (total)	**LOWER THAN** Sydney Metro average (NSW EPA)
The Hills Shire household waste contamination rate	6.65% for recycling 1.2% for green waste	**LOWER THAN** Sydney Metro average (NSW EPA)

Souce: Domestic Kerbside Waste, Recycling and Garden Organics Bin Audit 2017

Figure 11: Average weekly household garbage

Source: Domestic Kerbside Waste, Recycling and Garden Organics Bin Audit 2017

In 2017, an audit of The Shire's red bins (general waste) revealed:

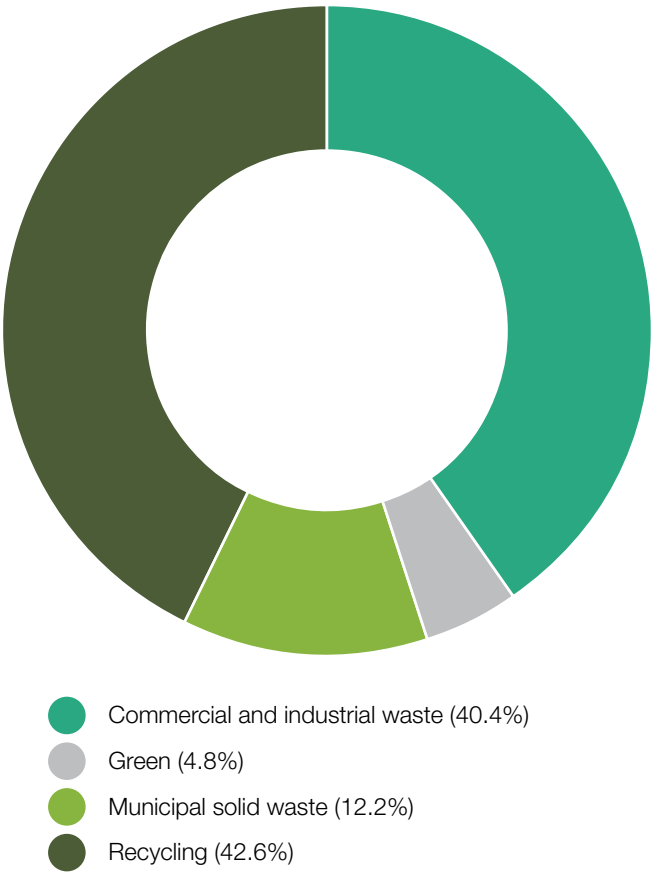
- 53 per cent potentially compostable material
- 14 per cent potentially recyclable material
- 33 per cent general waste.

Separating compostable waste and recycling will

reduce waste

in red-lid bins, reducing waste sent to landfill

Figure 12: The Hills Shire – all waste generation by type 2016–17



Source: Resilient Sydney 2019

Waste transport

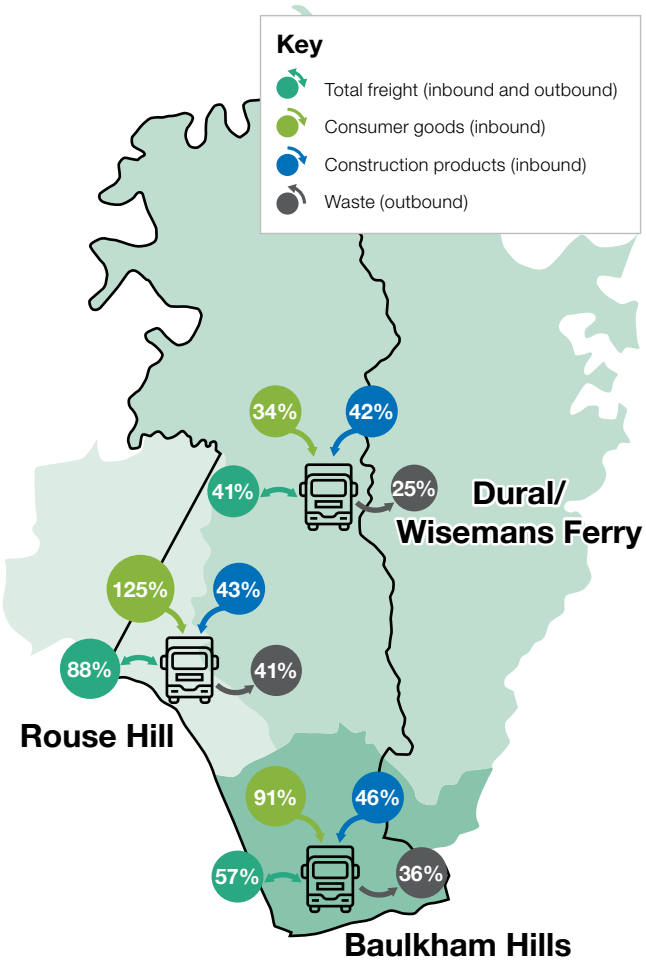
Waste disposal locations are a considerable distance from the Shire. Table 1 illustrates the distances of the final destinations for waste generated by the community.

Table 1: Round trip distances to waste facilities from The Hills

Waste type	Transferred to	Approximate round trip distance (from Council building at 3 Columbia Court, Norwest)
Garbage	Lucas Heights Resource Recovery Park	90km
Recycling	Smithfield Material Recovery Facility	35km
Garden organics	Eastern Creek Organics Resource Recovery Park	46km
Clean up waste	Elizabeth Drive Landfill	80km

By 2036, the amount of waste generated within the Central City District is expected to increase by 137 per cent presenting significant challenges in the transport and storage of waste.

Figure 13: Changes in freight demand in The Hills Shire to 2036



Source: Transport Performance and Analytics (Transport for NSW)

Across Greater Sydney, the diminishing capacity in existing landfill sites means more waste is being sent to landfills outside the region. This increases costs to the community and places a burden on those areas. Additional sites for waste management in Greater Sydney would improve efficiencies in managing waste. We are collaborating with other Western Sydney councils to investigate measures to improve efficiency in waste transfer and disposal. Regional contracting opportunities for waste processing may facilitate development of a new waste facility, such as an alternate waste treatment facility for municipal waste.

Environmental and urban risks and hazards

Living close to natural environments brings inherent risk from variable and extreme weather conditions and the devastating effects of natural disasters including storms, floods and bushfire. Managing environmental and urban risks and hazards is important for safety and quality of life.

The Hills Shire contains 30,000 hectares of bushfire-prone lands spread across both rural and urban areas. In addition, the Shire contains approximately 6,450 lots with the potential to be affected by flood. Bushfires and flooding are critical considerations in land use planning both at the strategic planning stage and in consideration of development applications.

Councils are required to undertake floodplain risk management studies for all flood-prone land within their local government area and adopt and implement floodplain risk management plans to address existing, future and continuing flood risk. Councils are also required to use the NSW Rural Fire Service's risk categories and comply with asset protection zoning and associated building standards to mitigate bushfire risk.

The Hawkesbury-Nepean River is fed by major tributaries but is confined by steep terrain as it winds its way through The Hills resulting in the 'bath tub' effect. Areas around Windsor, Richmond and Penrith flood rapidly and deeply and drain slowly. Council has been actively involved in the development of the Hawkesbury Nepean Flood Risk Strategy and will continue to work in collaboration with State Government to implement the outcomes of the strategy and associated regional flood study.

Most flood-affected land in The Hills is within rural areas north of the Urban Growth Boundary. Risk is managed through land use controls that limit growth in these areas and through flood controls in The Hills Development Control Plan (DCP).

The Hills Shire contains

30,000ha

of bushfire-prone lands

Cattai Ridge Road during a flood event

Urban heat

Extreme heat primarily affects established urban areas. Development of dwellings on smaller lots has reduced vegetation cover and limited opportunities to increase tree canopy, particularly in growth areas. In the western and northern portions of the urban parts of the Shire, land temperatures may exceed 43 degrees Celsius in extreme heat conditions. As the North West Growth Areas around North Kellyville and Box Hill continue to develop, it is likely that temperatures will continue to reach these levels in extreme heat events.

The choice of building materials compounds the effect of smaller lots, fewer trees and more hard surfaces. Increasingly, homeowners are requesting darker coloured materials for aesthetic reasons; however, darker materials absorb heat and contribute to increased surface temperatures.

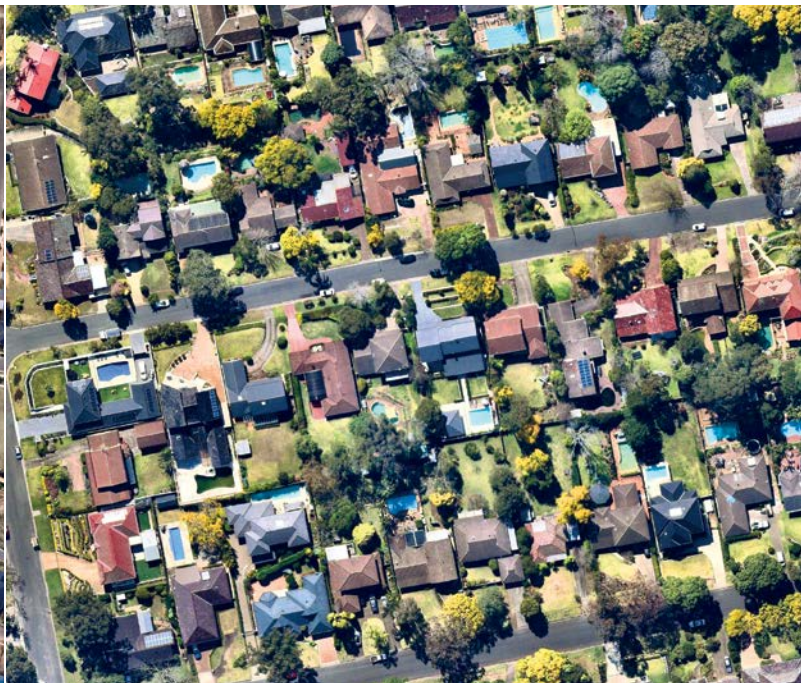
The photographs below depict development occurring in the Box Hill greenfield area and established areas in West Pennant Hills where surface temperatures are lower. The greenfield area dwellings are almost exclusively constructed with dark roof materials, where the established areas show a variety of materials that are generally of a lighter palette.

Using available heat mapping data, we can identify areas within the Shire that are most vulnerable to extreme heat. In the summer of 2015–16, most of the urban area measured between three and nine degrees hotter than non-urban vegetated areas. A small number of sites were measured at more than nine degrees hotter than this baseline measurement.

Land temperatures may exceed

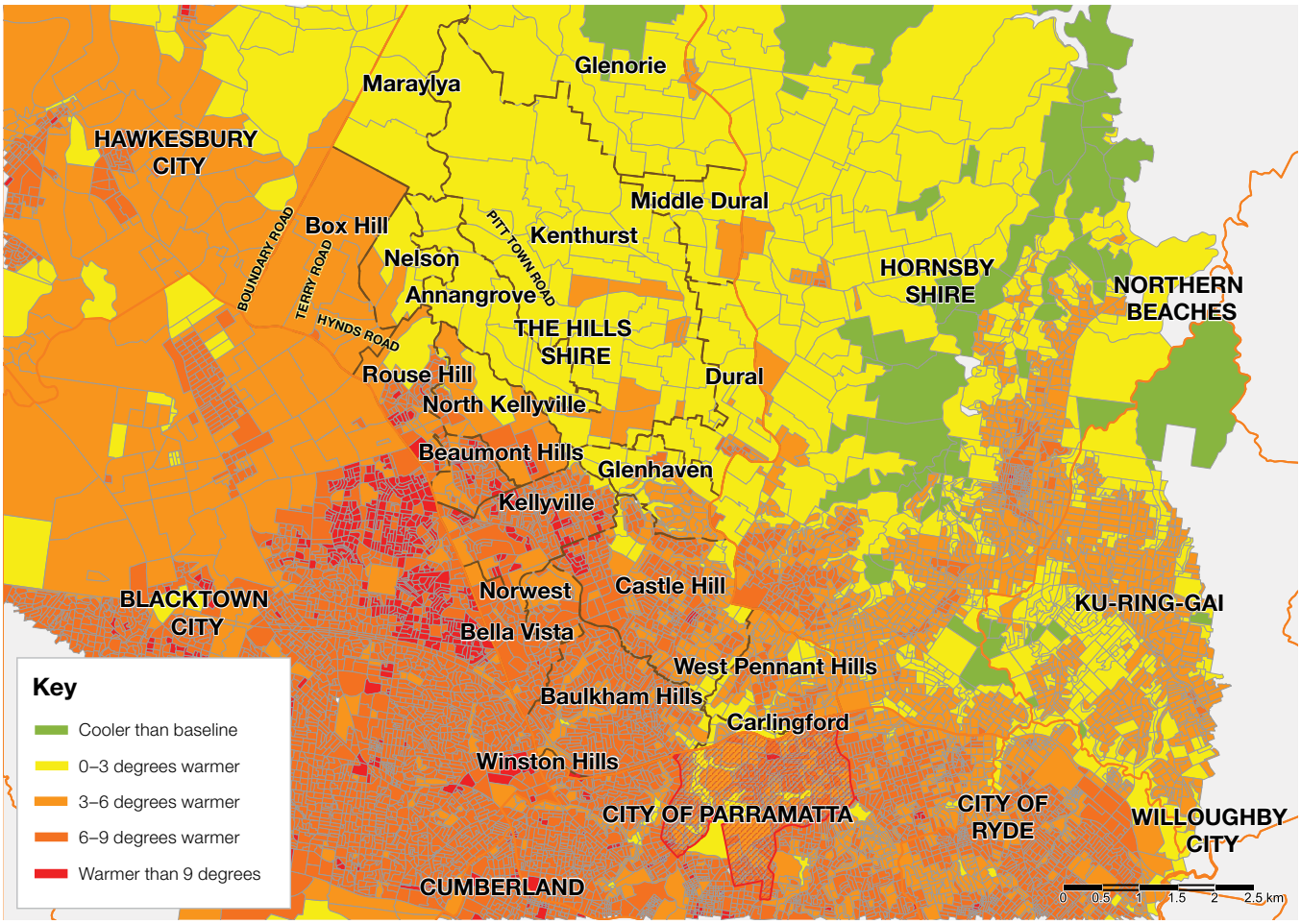
43 degrees

Celsius in extreme heat conditions



Roof colours for dwellings – Box Hill on the left, West Pennant Hills on the right.

Figure 14: Urban heat island 2015–2016



Source: NSW Office of Environment and Heritage

While planning and design of new housing incorporates controls guiding development, there is no regulatory framework driving adaptation of existing properties to climate extremes.

Raising awareness of and preparing residents for extreme heat, storms and floods can have numerous benefits including reducing damage to houses, reducing demand for emergency services (including SES), and reducing costs of utilities. Modifications such as more efficient glazing, shading, water capture and storage, and passive solar heating design can reduce household usage of electricity and water, and in turn, lessen reduce cost-of-living pressures.

> More efficient glazing, shading, water capture and storage, and passive solar heating design can reduce household use of electricity and water."

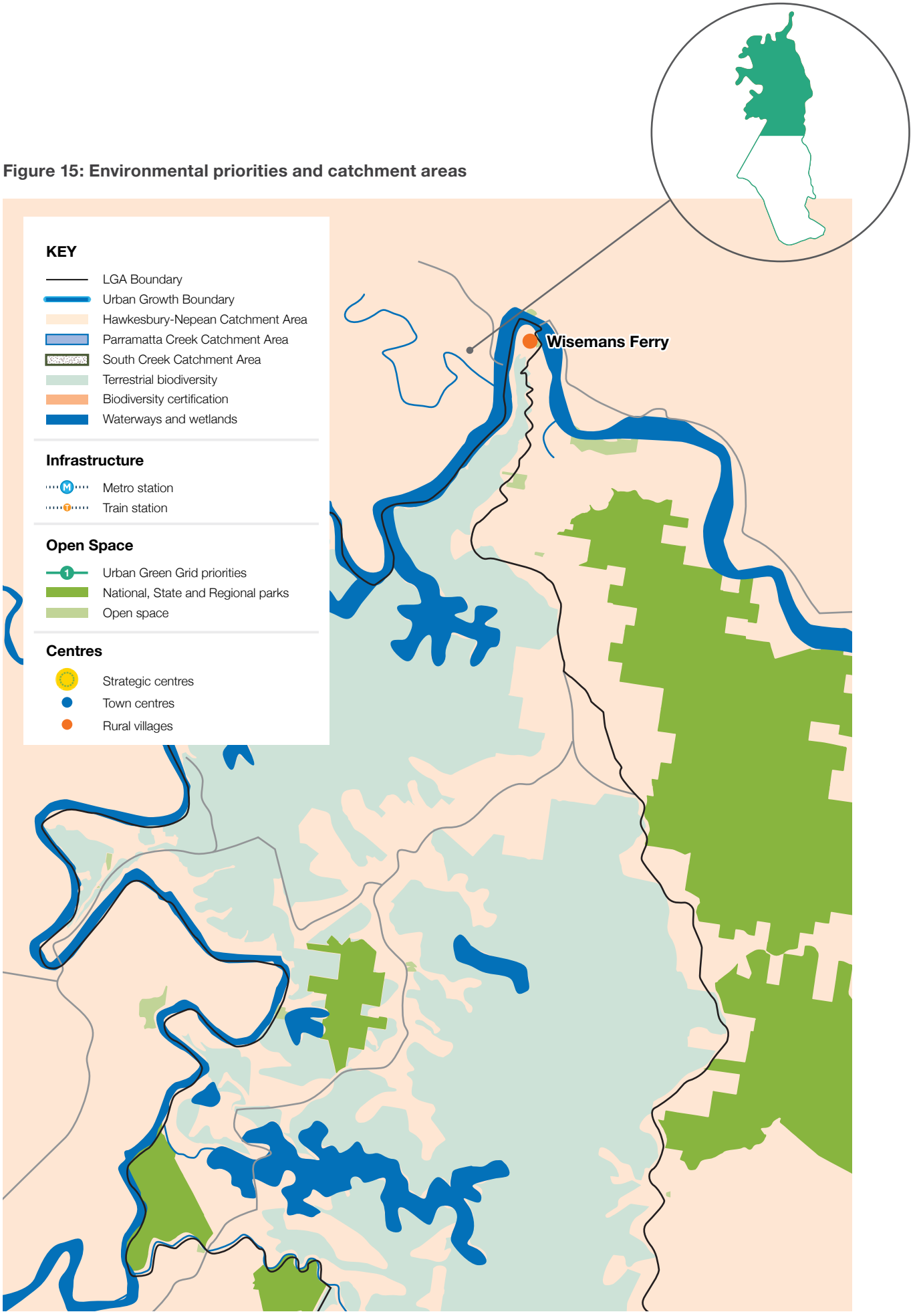
4

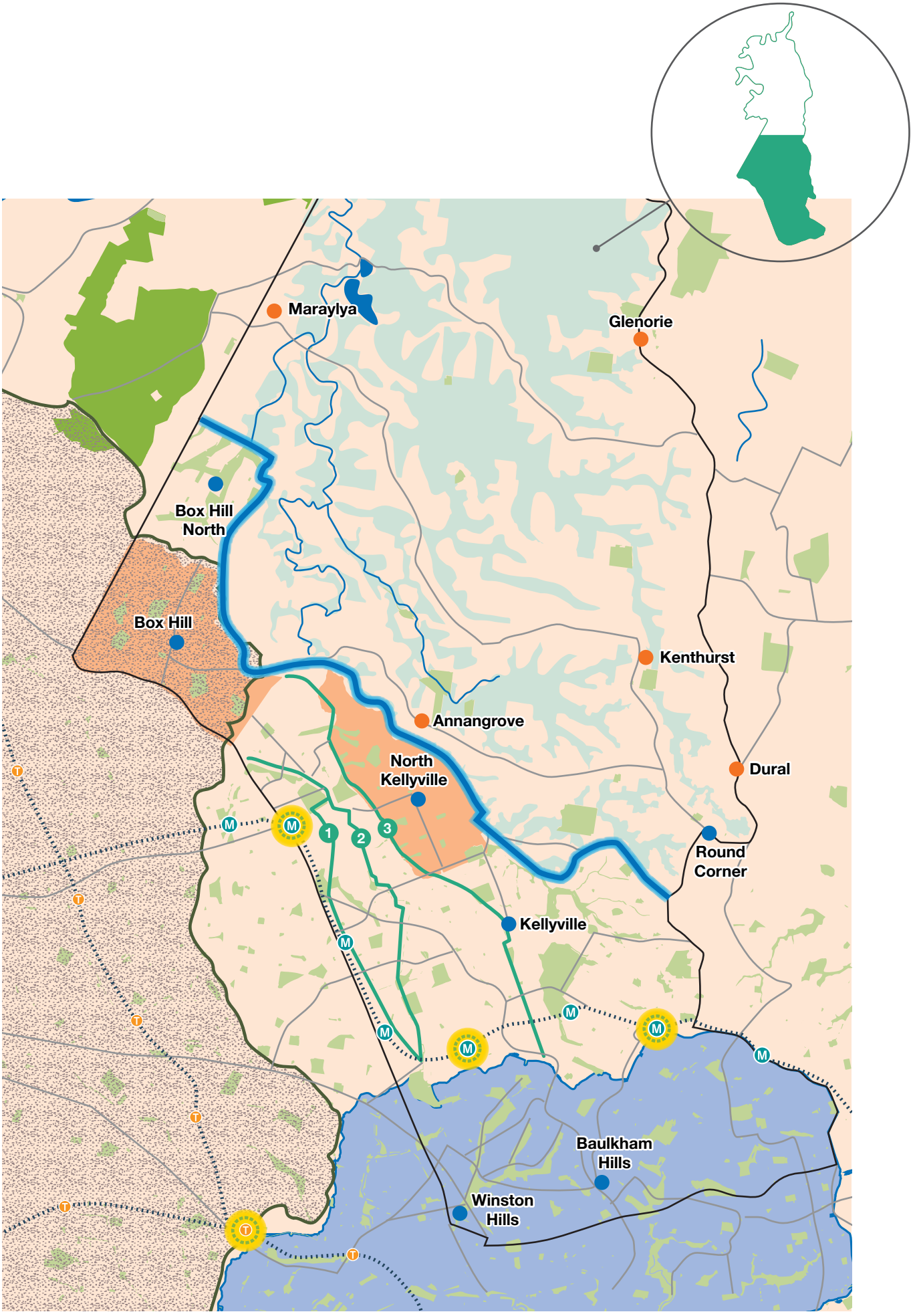
PLANNING PRIORITIES

This section outlines our priorities for the environment and how we will achieve these priorities. The planning priorities will guide how we plan for the Shire's environment, natural resource use and waste generation in the next five years and beyond.
The priorities are:

- protect areas of high environmental value and significance
- increase urban tree canopy cover
- manage natural resources and waste responsibly
- prepare residents for environmental and urban risks and hazards.

Figure 15: Environmental priorities and catchment areas




Maraylya
Glenorie
Box Hill North
Box Hill
Kenthurst
Annangrove
North Kellyville
Dural
Round Corner
Kellyville
Baulkham Hills
Winston Hills
1
2
3

Protect areas of high environmental value and significance

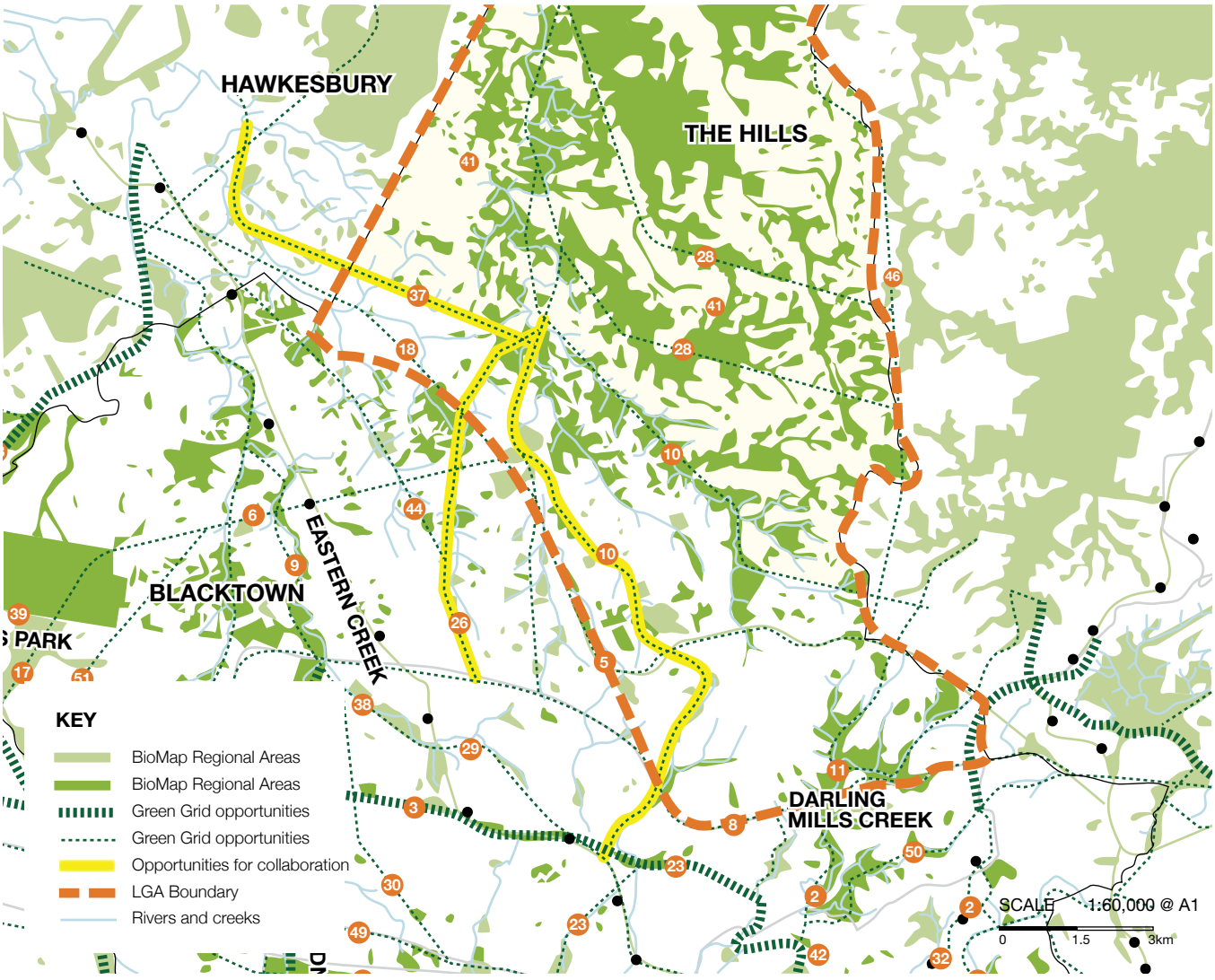
This relates to Planning Priority 17 in *Hills Future 2036.*

Rationale

Council recognises the importance of biodiversity and the need to increase habitat connectivity, improve water quality, and provide recreational and educational opportunities for the community. Where possible, we seek to embellish our open spaces with natural landscaping features so that they integrate with the surrounding environment. As well as improving water quality and quality of life and amenity for residents, preserving and expanding existing playing fields and other public open spaces contributes significantly to the Shire's biodiversity through improved vegetation and habitat linkages.

This Strategy complements the *Recreation Strategy 2019*, which aims to enhance existing open space and provide additional space to create healthy environments that benefit residents. We will seek opportunities to collaborate with neighbouring councils to make the most of habitat links through the Greater Sydney Green Grid, a NSW Government vision to connect people to their landscape.

Figure 16: Green Grid priorities



We use a Terrestrial Biodiversity map to assess potential impacts on biodiversity within The Hills. The map identifies environmentally sensitive areas that may need protection so that this may be considered early in the development assessment process.

In light of statutory changes to the management of vegetation in NSW since the Terrestrial Biodiversity map was developed, we are reviewing the map to ensure threatened species are protected. The revised Terrestrial Biodiversity map will apply to land in the rural area north of the proposed Urban Growth Boundary and will incorporate the latest available information on vegetation types and habitat quality. It will also incorporate waterways to ensure these valuable ecosystems are given sufficient recognition and protection through the Hills Local Environmental Plan (LEP). To ensure the Terrestrial Biodiversity map does not restrict reasonable development of rural properties, exclusion zones will be included around established and approved dwellings and outbuildings on affected land.

If required, the scope of the mapping may be extended into urban areas of the Shire in future. The revised Terrestrial Biodiversity map will:

- acknowledge the significance of biodiversity in the Shire
- afford additional protections to valuable areas of vegetation and habitat not previously covered under the existing map
- ensure that biodiversity is an integral consideration of development in sensitive areas that may not necessarily fall under the *Biodiversity Conservation Act 2016* (NSW).

Rural cluster subdivision

Rural cluster subdivision allows subdivision for rural residential purposes, with affected environmentally sensitive land protected or improved. We will continue to use rural cluster subdivision to facilitate an appropriate level of residential growth in the metropolitan rural area whilst upholding biodiversity protection principles. This provides an opportunity to facilitate biodiversity improvement works on private land, securing a more certain future for important vegetation corridors and preserving the bushland character of the Shire.

Since the introduction of rural cluster subdivision we have

Approved

62 applications

For rural cluster subdivision resulting in 436 development lots

Ensured the protection of over

650ha

of land for biodiversity conservation

In Box Hill and North Kellyville, we manage biodiversity through a process of biodiversity certification. Landowners seeking to develop land certified under a Biodiversity Certification Order are not required to undertake a threatened species assessment, streamlining the development process. This process balances the protection and management of conservation values with the efficient supply of land for urban development.

With the urban area of the Shire poised to change with Sydney Metro Northwest and rapid population growth, we will explore mechanisms to protect significant areas of public and privately owned vegetation and habitat within the urban environment. Given the Terrestrial Biodiversity Map does not currently extend into the Shire's urban area, Biodiversity certification may be an appropriate tool.

Community involvement

Due to the high level of private ownership of land within the Shire, involving the community and educating residents and students about ways to reduce their impact on the environment is paramount.

Bushcare volunteers and the work of the Community Environment Centre will continue to play a significant role in educating residents about improving biodiversity. Continued support in growing these resources will provide the skills and materials to review and develop programs for improvement of vegetation in key corridors.

Figure 17: Community Environment Centre services and resources

Aboriginal cultural heritage

Protection of Aboriginal cultural heritage goes hand in hand with responsible environmental protection and management. Before European settlement, Aboriginal people from the Darug tribe lived on the land now known as The Hills Shire. The Darug people had a unique and complex relationship with the land, within which all parts of the local landscape had cultural significance and meaning. Archaeological evidence of Aboriginal occupation of this land is abundant throughout the Shire, particularly around the Hawkesbury River and nearby hills, valleys and creek-lines.

The identification, management and conservation of Aboriginal cultural heritage are the responsibility of the NSW Department of Planning, Industry and Environment under the *National Parks and Wildlife Act 1974* (NSW). Our role is to observe the statutory protections found in this Act and to implement appropriate environmental protection zones that restrict or even prevent development in areas where Aboriginal cultural heritage is likely to be present so that it can be protected for future generations.

Existing greenfield areas were extensively investigated for Aboriginal cultural heritage as part of the precinct planning process undertaken by the then Department of Planning and Infrastructure. With no new areas proposed to be released for urban development, Aboriginal heritage sites do not need to be reviewed for inclusion in the LEP.

Council will:

- Protect natural assets and ensure the biodiversity of the Shire is appropriately identified and preserved for future generations.
- Retain and enhance vegetated riparian corridors, bird habitats and wildlife corridors to support biodiversity and water quality outcomes.
- Seek opportunities to improve access to Green Grid corridors in our urban areas.
- Continue to manage areas of high environmental value.
- Continue to protect and enhance water quality in local catchment areas.
- Progressively fill the gaps in the network of paths to complete the Green Grid priorities identified in the District Plan.
- Protect items of Aboriginal cultural heritage significance from the impacts of development.

Actions

- Review and update Terrestrial Biodiversity mapping as contained in our LEP.
- Commence a review to update waterway health mapping.
- Identify opportunities to collaborate with adjoining councils to link Green Grid corridor initiatives.

Future work

- Investigate biodiversity certification as a tool for managing biodiversity outcomes in the Shire's urban area.

Increase urban tree canopy cover

This relates to Planning Priority 18 of *Hills Future 2036.*

Rationale

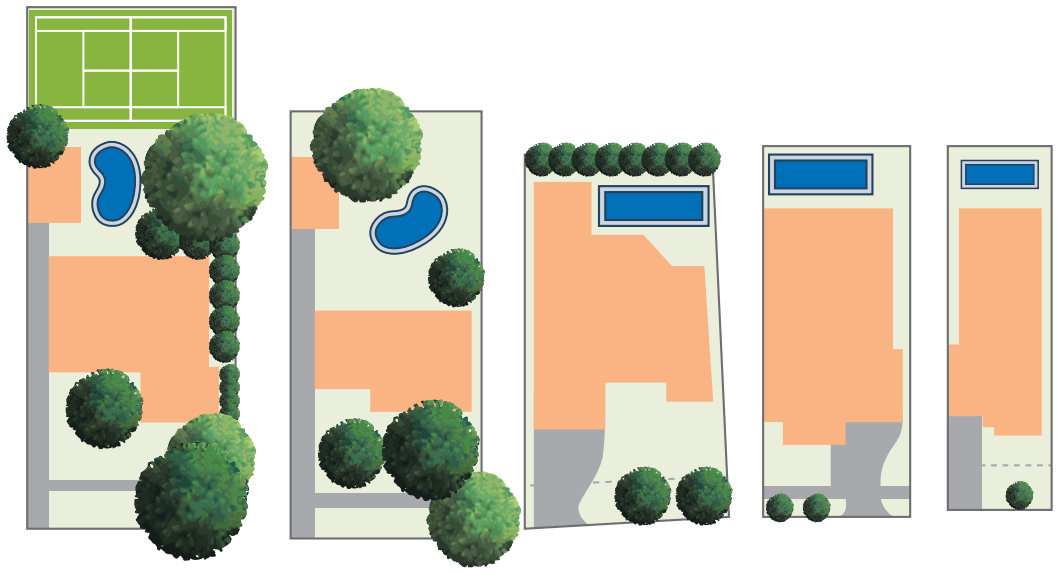
Carefully planned landscaping to increase the number of trees and plants within the urban area plays a part in good urban design, reducing the urban heat island effect and contributing to the appeal of places. It also translates to better health for the community and opportunities for increased biodiversity in urban areas. New and diverse habitat types, such as green roofs and walls, can complement natural areas and help grow the urban forest.

Trees can help reduce the impact of heat waves and extreme heat. The urban heat island effect is the phenomenon of higher temperatures in urban areas, due to retained and reflected heat from hard surfaces. According to the United Nations' *New Urban Agenda* (2016), trees can cool cities by between two and eight degrees Celsius. When planted near buildings, trees can cut air conditioning use by up to 30 per cent. One large tree can absorb 150 kilograms of carbon dioxide a year, as well as filter airborne pollutants.

Figure 18: Urban tree canopy

Source: NSW Department of Planning, Industry and Environment

Figure 19: Evolution of housing in The Hills



The Hills is fortunate to benefit from good urban tree canopy cover in the east. These areas typically contain older detached dwellings on large lots and have historically contributed to the 'Garden Shire' image of The Hills. Residential streets with wide setbacks containing established street trees, intermingled with large swathes of urban bushland such as Fred Caterson and Bidjigal reserves give rise to the feeling of connection to nature in established urban areas.

As residential development has expanded in the west and north of the Shire, development lots have become smaller and house sizes larger, reducing space for trees. This is evident in Figure 18, which shows the difference between the older and newer suburbs in regards to tree canopy density.

With decreasing lot sizes, public areas are increasingly important in urban tree canopy provision. However, the location of infrastructure services and smaller road verges limits the potential to provide tree cover in urban release areas.

Data from the NSW Government's *Sharing and Enabling Environmental Data* (SEED) portal reveals suburbs within the Shire that require particular attention. Kellyville and Box Hill for example, have less than 10 per cent coverage. We will continue to use data from the SEED portal to establish baselines and to monitor progress towards improving urban tree canopy cover.

Master planning and urban design

We use a master planning approach to plan for new areas of development, and to plan for the renewal of existing places. Incorporating a significant amount of landscaping within new and existing urban areas will benefit the environment by making efficient and appropriate use of land, reducing the level of car dependency and increasing the amount of tree coverage in our urban areas.

We have extended this master planning approach to include development of street tree master plans for areas of high growth. Implemented through conditions of consent on development applications these plans include a list of trees suitable for each location and allow property owners, developers and Council to work towards a common plan. Opportunities to increase tree coverage also arise when new open spaces are established or existing open spaces expanded or enhanced.

Once developed, our *Public Domain Strategy* may give additional guidance on increasing the number of street trees, such as their use as traffic calming devices where deeper soil may be available away from services and footpaths.

Street Tree Planting Program

Street Tree Planting Program

Our Street Tree Planting Program helps residents to green their suburb by providing appropriate street trees and advice on how to care for them. The program has been offered since Council's establishment in 1906, with approximately 250 requests for new trees received in the last financial year – almost half of these requests coming from Kellyville and North Kellyville.

While the program has been available for a long time, residents may be unaware of it. Increased promotion may increase the urban tree canopy and help us to identify areas with favourable attributes including available verge space and convenient location of services, which may then be able to be targeted for particular attention. This program is in addition to our Community Nursery which provides Hills residents with four free plants native to the Shire each year.

Council will:

- Incorporate measures to increase urban tree canopy and shading within the *Public Domain Strategy*.
- Progressively develop street tree master plans for high growth areas.
- Continue to educate residents about the Street Tree Planting Program and the benefits of street trees.

Actions

- Identify areas vulnerable to the urban heat island effect and direct planting and education efforts to these areas.

Manage natural resources and waste responsibly

This relates to Planning Priority 19 in *Hills Future 2036.*

Rationale

Water is a finite and valuable resource essential for life and a healthy environment. The Hills Shire covers 38 major sub-catchments draining to the Hawkesbury-Nepean, South Creek and Upper Parramatta river catchments via more than 900 kilometres of natural and constructed waterways. The Shire also contains 52 kilometres of Hawkesbury River frontage from Cattai Creek, in Cattai, to the ferry crossing at Wisemans Ferry.

Local waterways drain stormwater from urban areas, provide wildlife corridors and aquatic habitats, and help to improve the quality of water entering the Hawkesbury River. Waterways also provide opportunities for the community to enjoy the outdoors and support sport and recreation.

The size and unique diversity of the Shire's water systems, as well as development pressures resulting from an increasing population, present many challenges for management of water. Between 2016 and 2036, the Shire's consumption of potable water could more than double if water use continues at the same rate as today.

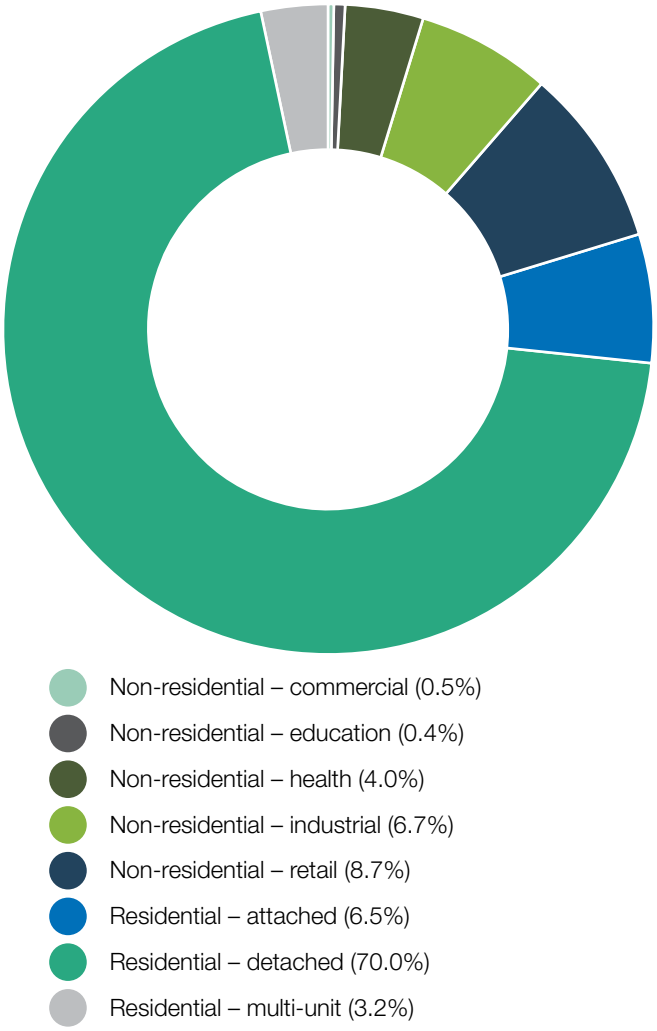
On average, each person who lives in the Shire uses 226 litres of fresh water every day, slightly above the Greater Sydney average of 210 litres. This includes water used for drinking, cooking, washing, laundry, toilet flushing and gardening. When considering this use on a household and Shire-wide scale, the amount of fresh water required to sustain the current level of usage is considerable.

Figure 20: Average potable water consumption

Source: Resilient Sydney 2019

Similar to energy consumption most water consumption is attributed to residential households, reflecting the high number of residential properties as compared to industrial and other non-residential uses in the Shire.

Figure 21: Water usage by sector 2016–17



Source: Resilient Sydney 2019

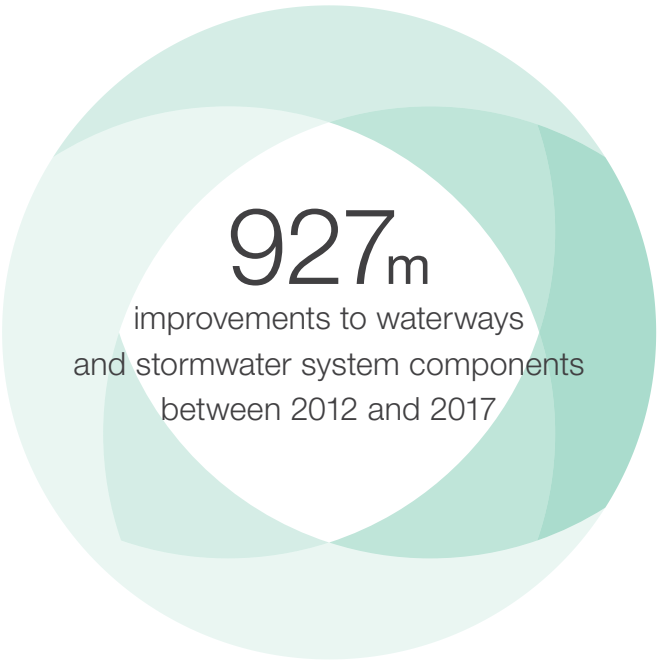
Reducing water consumption will reduce pressure on water systems and the natural environment. It will also reduce costs to Council, businesses and residents. Water prices have been steadily increasing with inflation in NSW over the past decade (IPART 2016 Sydney Water Price Review – Residential Customers). This is likely to continue due to the growing urban population and the costs associated with building the necessary water infrastructure. When the NSW Government activates the desalination plant to augment Sydney's water supply in times of low rainfall, the cost of water may rise further.

We seek to conserve water and reduce overall consumption through water-sensitive infrastructure. For example, development in North Kellyville is serviced by a reticulated greywater recycling system, and our DCP requires new dwellings to implement at least two water sensitive urban design measures, such as low impact building or landscape design, or using stormwater for irrigation. We continue to support and implement the Building and Sustainability Index (BASIX) to promote and encourage the incorporation of greywater recycling into new dwellings. In areas of significant change that are subject to precinct planning, Council will investigate opportunities to incentivise development which exceeds the minimum BASIX standards to support the development of sustainable neighbourhoods.

Many residents within The Hills have access to the Rouse Hill Water Recycling Scheme for irrigation, flushing toilets, washing and other outdoor uses. Rainwater tanks are well used in new developments to catch water from roof tops, decreasing reliance on potable water and reducing the risks of flash-flooding or storm surges in waterways.

Community demand for high quality parks and green spaces has resulted in rising water use by Council, as we seek to maintain these spaces in line with community expectations. Parks and gardens are one of the largest consumers of water.

We will continue to install sub-surface drainage and water tank infrastructure at sports complexes to capture excess water from the playing surface to be re-used for irrigation. This reduces the amount of potable water required to maintain high quality playing surfaces, reduces stormwater run-off and prevents nutrients leaching into local waterways. Recycled water from the Rouse Hill Water Recycled Scheme is used for sports field irrigation where possible to further reduce reliance on potable water for irrigation. We have also installed several synthetic turf playing surfaces to eliminate irrigation requirements. We are investigating greywater recycling at Ted Horwood Reserve at Baulkham Hills, with further locations to be considered.



Natural and constructed waterways

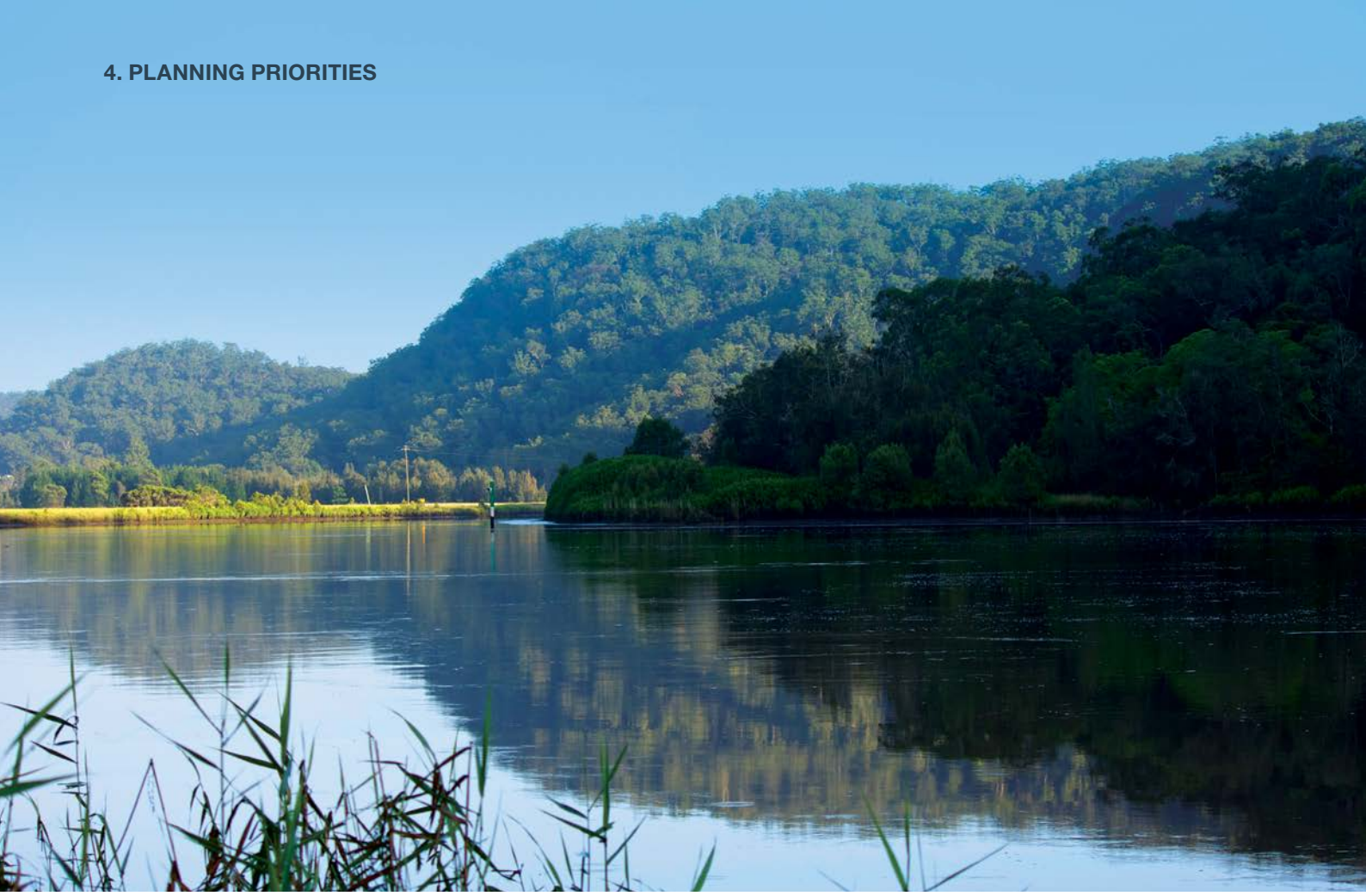
Over the coming decades, pressure on waterways and stormwater systems will increase. Significant population and housing growth will increase sediment and run-off that, if not carefully managed, could detrimentally affect waterways. This is in addition to the pressure of additional people seeking access to waterways for recreational purposes.

As the community grows and demand on the stormwater network increases, its effective functioning will be crucial. Stormwater systems convey run-off from urban (and some rural) areas to centralised drainage basins and natural waterways. The 927 metres of improvements to waterways and stormwater system components we made between 2012 and 2017 reflects the importance we place on the safe management of stormwater, and our priority to minimise stormwater impact on receiving waters, and health and safety risks to the public.

Due in part to increased run-off from development, water clarity in the Hawkesbury River has declined to the point that it could detrimentally affect recreation and economic opportunities along the Hawkesbury. Continuing to work with NSW Government and other councils in the catchment will ensure that water quality can sustain all uses reliant on the river.

We are preparing a comprehensive Stormwater Asset Management Plan to safeguard the health of waterways and functionality and safety of the stormwater network. The Management Plan will inform our Stormwater Capital Works Program and include guidance on planning and management of our stormwater assets.

Water management requires that we take a holistic approach to the stormwater network, waterways, wetlands and coastal areas to ensure the health and enjoyment of waterways, wetlands and rivers is valued and managed for future generations.



Hawkesbury River

Wetlands

Wetlands reduce the impacts of floods, absorb pollutants and improve water quality. They provide habitat for animals and plants and many contain a diversity of plants and animals that may not be found elsewhere.

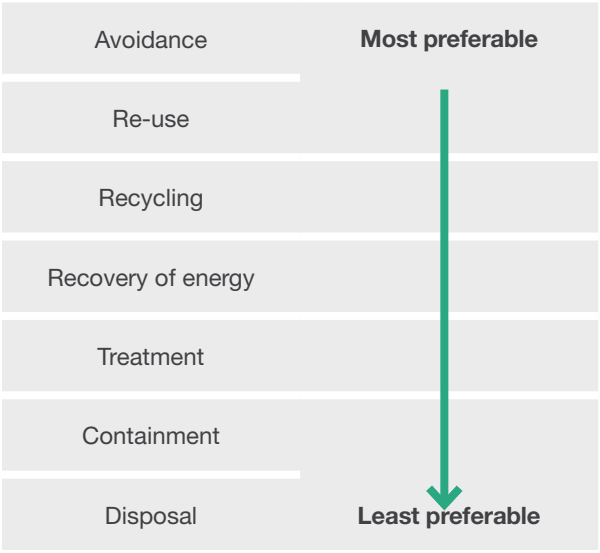
We mapped and included 11 wetlands in the E2 Environmental Conservation zone under The Hills LEP to afford their protection. The E2 zone aims to protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values by preventing development that could have an adverse effect on those values.

With the Hawkesbury River estuary influenced by activities in the Shire, we will collaborate with other Hawkesbury River coastal councils and the community to develop and implement a coastal management plan that will improve identified coastal waterways within the Shire.

> Wetlands occur on land where soils are waterlogged either permanently, seasonally, ephemerally or tidally and which support vegetation dominated by sedges, rushes, reeds and wet-loving or halophytic herbs."
>
> Ramsar Convention

Waste generation

Waste generation is outpacing population growth which makes education integral to our waste management strategy. Avoiding materials and resources use where possible, especially plastics and non-renewable resources, reduces total waste as well as reducing pressure on natural resources.



We are investigating opportunities to incorporate food for composting into the green-lid organics bin to help reduce waste management costs and the amount of waste going to landfill. This is in addition to our long-running provision of compost bins and worm farms to residents at reduced prices.

We also recognise that new waste systems could be trialled in higher density neighbourhoods to improve efficiency and reduce truck movements.

Case Study – Onsite composting

Through the Better Waste and Recycling Fund, we will trial an innovative onsite composting system at an apartment building to give residents an opportunity to divert food waste and garden vegetation from landfill through onsite composting. The resulting compost can then be used in the apartment complex's communal gardens.

The trial will test an innovative alternative to the traditional approach of collecting kitchen food waste in separate bins or through a composting service. These approaches can be problematic to implement in apartment buildings.

As part of the trial, we will measure the kilograms of waste composted and diverted from landfill, determine the contamination rates, and, through consultation, establish participation rates and resident satisfaction. This will guide future policy decisions including development controls for processing facilities in multi-unit developments.

Denser building forms present an ongoing challenge for waste collection. Narrow rear laneways that service terrace housing in some locations limit the size of waste collection vehicles that can safely navigate these areas. With the changing nature of dwelling and street patterns in urban areas of The Hills, we will review laneway and local street designs to ensure sufficient space for efficient and safe garbage collection. Ideally, laneways will be designed to accommodate side-loading driver operated vehicles. This will ensure that waste can be collected and transported efficiently, limiting the frequency of vehicle trips and reducing risk of property damage to dwellings with rear lane access.

Example of rear laneways

In apartment buildings the volume of waste generated, combined with access restrictions, often necessitates collection by smaller vehicles and can result in a single apartment building requiring multiple daily waste collections.

A review of waste management controls for high density residential and mixed-use developments will be undertaken to ensure waste management systems are convenient, maximise source separation and are responsive to future needs.

Evolving technologies

Developing technology presents opportunities to monitor and decrease consumption of natural resources. Smart cities are those that integrate technology to improve liveability and can contribute to improved environmental outcomes. Technology can make places more people-focused and responsive to their needs.

As opportunities arise, we will investigate the use of smart technologies that could assist with:

- on-demand street lighting
- urban temperature monitoring
- waste collection and transfer
- watering systems
- pollution monitoring
- electric vehicle charging station availability
- monitoring of energy and water use.

> Smart growth means collaboration and better sharing the resources we already have. Sharing and efficiency are absolutely essential in the environment and times we live in."
>
> Mayor of The Hills Shire, Dr Michelle Byrne

Council will:

- Continue to educate the community on how to minimise waste generation and raise awareness of waste as a resource.
- Continue to investigate regional contracting opportunities that may assist in the development of an alternative waste disposal facility for the Western Sydney region.
- Investigate opportunities to capture and re-use water on Council-owned facilities.
- Continue to improve the efficiency of public assets through projects that decrease ongoing running costs.
- Investigate opportunities where precinct planning can incentivise development to exceed minimum BASIX ratings, reducing living costs and the carbon footprint of residents.
- Continue to support the Design Excellence and Design Review panels in encouraging development that limits environmental impacts and accords with the principles of ecologically sustainable design.
- Continue to limit impacts on natural resources through the preparation, review and implementation of development control plans.

Actions

- Commence trial of onsite organics waste separation for high density developments.
- Seek community feedback on the collection of food waste in existing green lid bins.
- Review development controls for residential flat buildings and rear laneways to ensure sufficient space for efficient and safe waste collection.
- Complete the Stormwater Asset Management Plan.

Future work

- Develop a water sensitive urban design checklist for applicants and planners.
- Review and update the DCP to reflect best practice in water sensitive urban design.
- Review development controls for residential flat buildings to consider loading areas for waste vehicles and options for onsite waste management systems to maximise source separation.

Prepare residents for environmental and urban risks and hazards

This relates to Planning Priority 20 in *Hills Future 2036.*

Rationale

New purchasers and existing owners need information on potential environmental risks and actions that will improve resilience of their property to future extreme weather events and conditions.

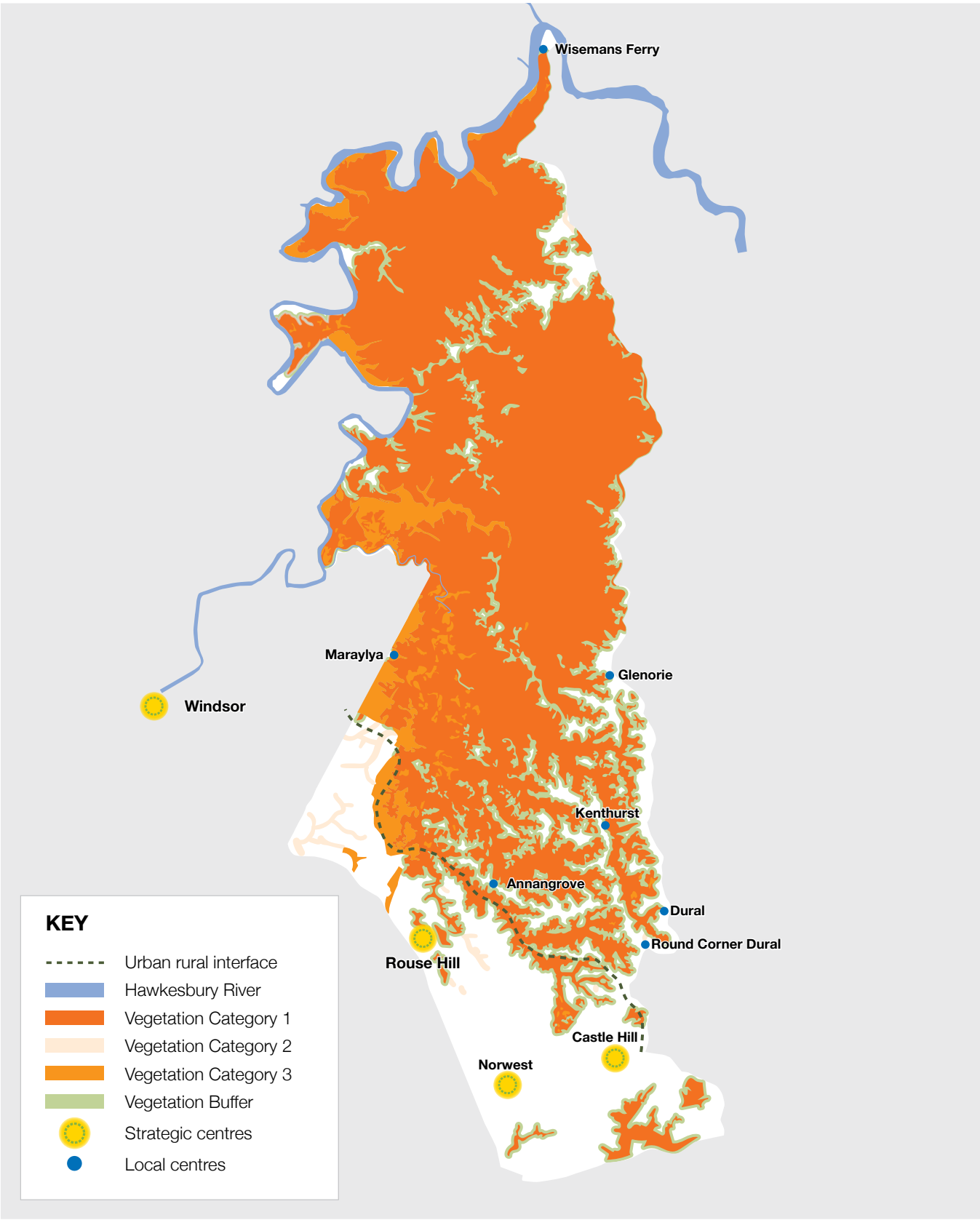
Raising awareness of and preparing residents for extreme heat, storms and floods can have numerous benefits including reducing damage to houses, reducing demand for emergency services (including SES), and reducing costs of utilities. Modifications such as more efficient glazing, shading, water capture and storage, and passive solar design can reduce household usage of electricity and water, and in turn, reduce cost-of-living pressures.

While shaping the Shire to accommodate population growth, we need to consider how developing technology can improve design and management of places, and the best way to increase the number of trees in the urban area.

Bushfire and flooding

Regular amendments to The Hills Shire Bushfire-Prone Land Map makes the most up-to-date information available to the community to assist them in making land-use choices and to guide assessment of applications for development on bushfire-affected lands. Hazard identification maps identify areas where growth should be avoided and where special development considerations should be given and inform emergency response measures.

Figure 22: Bushfire risk within the Hills Shire



Currently available hazard maps include:

- Bushfire-Prone Land Map – prepared by the NSW Rural Fire Service
- Landslide Risk Maps that identify sites affected by geotechnical instability.

Risks associated with bushfire and flooding include fire damage, property inundation, isolation due to road closures and health impacts associated with flood waters. The Hawkesbury-Nepean River is fed by major tributaries but is confined by steep terrain as it winds its way through The Hills resulting in the 'bath tub' effect. Areas around Windsor, Richmond and Penrith flood rapidly and deeply and drain slowly.

Most flood-affected land in The Hills is within rural areas north of the Urban Growth Boundary. Risk is managed through land use controls that limit growth in these areas and through flood controls in the DCP.

We will continue to obtain advice from NSW Rural Fire Service regarding the bushfire risk that affects most of the Shire.

We provide information on how residents can best prepare themselves and their properties for various emergencies. Our Local Emergency Management Plan outlines how Council and emergency services respond in an emergency.

Urban heat, pollution and public health

Fortunately, a significant portion of the urban area is mapped as least vulnerable to the urban heat island effect, therefore providing a buffer from the effects of extreme heat (see Figure 14). This means that most households have access to cooling for their homes including air conditioning, street trees and good quality construction.

The growing population brings with it risks associated with decreased air and water quality, as well as noise and potentially odours. We respond to local air, water, noise and odour pollution issues to protect the health of the community and manage public health risks associated with food premises, skin penetration businesses and recreational aquatic facilities.

Council will:

- Continue to provide hazard identification maps that show areas at risk of bushfire and geotechnical instability.
- Educate and inform our community about environmental and weather-related risks and hazards.
- Continue to collaborate with the NSW Government, including Infrastructure NSW, in response to the Hawkesbury-Nepean Flood Study and regional flood risk, including flood awareness and education in the Hawkesbury-Nepean catchment.

Actions

- Prepare a suite of information material to raise awareness of and prepare existing and future residents for environmental and urban risks and hazards.
- Review and update flood planning controls and flood plan as required.

5

IMPLEMENTATION, MONITORING AND REVIEW

Implementation and delivery

The actions in this Strategy will be implemented in accordance with the implementation plan supporting *Hills Future 2036*.

Stakeholders

Stakeholders who will help us to deliver the actions include:

- residents
- surrounding councils
- State agencies including the Greater Sydney Commission, Department of Planning, Industry and Environment, and the NSW Environment Protection Authority
- waste contractors
- developers
- volunteer groups.

Planning instrument

The *Environment Strategy 2019* flags a number of potential changes to planning controls following further investigations. It is anticipated that identified changes will be completed by the next five-year review including:

- Amendments to the Terrestrial Biodiversity map to reflect best practice and ensure that environmentally sensitive lands are suitably identified and supported by controls to accurately inform decision making.

Monitoring and review

The *Environment Strategy 2019* will be monitored annually and a report made to Council to inform future review programs. We expect to review, exhibit and re-adopt the Strategy every five years so it best reflects community concerns and aspirations as well as best practice in land use planning for responsible environmental management.

6

APPENDICES

Appendix A:
List of threatened, endangered and critically endangered species

Key		
Commonwealth status	CE	Critically Endangered
(Commonwealth *Environmental Protection and Biodiversity Act 1999*)	E	Endangered
	V	Vulnerable
NSW status	V	Vulnerable
(*Biodiversity Conservation Act 2016*)	P	Protected
	E1	Endangered
	E4A	Critically Endangered
	2	Sensitivity Class 2 (Sensitive Species Data Policy)
	3	Sensitivity Class 3 (Sensitive Species Data Policy)

Known threatened fauna species in The Hills Shire

	Common name	Scientific name	Commonwealth status	NSW status
1	Australasian Bittern	*Botaurus poiciloptilus*	E	E1,P
2	Barking Owl	*Ninox connivens*		V,P,3
3	Black Bittern	*Ixobrychus flavicollis*		V,P
4	Black Falcon	*Falco subniger*		V,P
5	Black-chinned Honeyeater (eastern subspecies)	*Melithreptus gularis*		V,P
6	Brown Treecreeper (eastern subspecies)	*Climacteris picumnus victoriae*		V,P
7	Comb-crested Jacana	*Irediparra gallinacea*		V,P
8	Cumberland Plain Land Snail	*Meridolum corneovirens*		E1
9	Diamond Firetail	*Stagonopleura guttata*		V,P
10	Dural Woodland Snail	*Pommerhelix duralensis*	E	E1
11	Dusky Woodswallow	*Artamus cyanopterus*		V,P

	Common name	Scientific name	Commonwealth status	NSW status
12	Eastern Bentwing-bat	*Miniopterus schreibersii oceanensis*		V,P
13	Eastern Cave Bat	*Vespadelus troughtoni*		V,P
14	Eastern False Pipistrelle	*Falsistrellus tasmaniensis*		V,P
15	Eastern Freetail-bat	*Mormopterus norfolkensis*		V,P
16	Eastern Osprey	*Pandion cristatus*		V,P,3
17	Eastern Pygmy-possum	*Cercartetus nanus*		V,P
18	Flame Robin	*Petroica phoenicea*		V,P
19	Freckled Duck	*Stictonetta naevosa*		V,P
20	Gang-gang Cockatoo	*Callocephalon fimbriatum*		V,P,3
21	Giant Burrowing Frog	*Heleioporus australiacus*	V	V,P
22	Glossy Black-Cockatoo	*Calyptorhynchus lathami*		V,P,2
23	Greater Broad-nosed Bat	*Scoteanax rueppellii*		V,P
24	Greater Glider	*Petauroides volans*	V	P
25	Green and Golden Bell Frog	*Litoria aurea*	V	E1,P
26	Grey-headed Flying-fox	*Pteropus poliocephalus*	V	V,P
27	Hooded Robin (south-eastern form)	*Melanodryas cucullata*		V,P
28	Koala	*Phascolarcto scinereus*	V	V,P
29	Large-eared Pied Bat	*Chalinolobus dwyeri*	V	V,P
30	Little Bentwing-bat	*Miniopterus australis*		V,P
31	Little Eagle	*Hieraaetus morphnoides*		V,P
32	Little Lorikeet	*Glossopsitta pusilla*		V,P
33	Masked Owl	*Tytonovae hollandiae*		V,P,3
34	Pink Robin	*Petroica rodinogaster*		V,P
35	Powerful Owl	*Ninox strenua*		V,P,3
36	Red-crowned Toadlet	*Pseudophryne australis*		V,P
37	Regent Honeyeater	*Anthochaera phrygia*	CE	E4A,P
38	Scarlet Robin	*Petroica boodang*		V,P
39	Sooty Owl	*Tytotene bricosa*		V,P,3
40	Southern Myotis	*Myotis macropus*		V,P

	Common name	Scientific name	Commonwealth status	NSW status
41	Speckled Warbler	*Chthonicolasa gittata*		V,P
42	Spotted Harrier	*Circus assimilis*		V,P
43	Spotted-tailed Quoll	*Dasyurus maculatus*	E	V,P
44	Square-tailed Kite	*Lophoictinia isura*		V,P,3
45	Squirrel Glider	*Petaurus norfolcensis*		V,P
46	Superb Parrot	*Polytelis swainsonii*	V	V,P,3
47	Swift Parrot	*Lathamus discolor*	CE	E1,P,3
48	Turquoise Parrot	*Neophema pulchella*		V,P,3
49	Varied Sittella	*Daphoenositta chrysoptera*		V,P
50	White-bellied Sea-Eagle	*Haliaeetus leucogaster*	C	V,P
51	Yellow-bellied Glider	*Petaurus australis*		V,P
52	Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*		V,P

Known threatened flora species in The Hills Shire

	Scientific Name	Common name	Commonwealth status	NSW status
1	*Acacia bynoeana*	Bynoe's Wattle	V	E1,P
2	*Acacia gordonii*		E	E1,P
3	*Acacia pubescens*	Downy Wattle	V	V,P
4	*Ancistrachne maidenii*			V,P
5	*Asterolasiaelegans*		E	E1,P
6	*Callistemon linearifolius*	Netted Bottle Brush		V,P,3
7	*Darwiniabiflora*		V	V,P
8	*Dillwynia tenuifolia*			V,P
9	*Epacris purpurascens var. purpurascens*			V,P
10	*Eucalyptus sp. Cattai*		CE	E4A,P
11	*Grevillea parviflora subsp. parviflora*	Small-flower Grevillea	V	V,P
12	*Grevillea parviflora subsp. supplicans*			E1,P
13	*Hibbertia puberula*			
14	*Hibbertia superans*			E1,P
15	*Hibbertia spanantha*			
16	*Isotomafluviatilis subsp. fluviatilis*			
17	*Kunzea rupestris*		V	V,P
18	*Lasiopetalum joyceae*		V	V,P
19	*Leucopogon fletcheri subsp. Fletcheri*			E1,P
20	*Melaleuca deanei*	Deane's Paperbark	V	V,P
21	*Micromyrtus blakelyi*		V	V,P
22	*Olearia cordata*		V	V,P
23	*Persoonia hirsuta*	Hairy Geebung	E	E1,P,3
24	*Persooniamollis subsp. maxima*		E	E1,P
25	*Pimeleacurviflora var. curviflora*		V	V,P
26	*Pomaderris brunnea*	Brown Pomaderris	V	E1,P
27	*Rhodamnia rubescens*			
28	*Tetratheca glandulosa*			V,P
29	*Zieriainvolucrata*		V	E1,P

Known threatened flora populations in The Hills Shire

	Endangered population
1	*Dillwynia tenuifolia*
2	*Darwiniafascicularis ssp. Oligantha*

Known threatened ecological communities in The Hills Shire

	Ecological community	Commonwealth status	NSW status
1	Blue Gum High Forest	CE	CE
2	Cumberland Plain Woodland	CE	CE
3	Sydney Turpentine-Ironbark Forest	CE	CE
4	Shale-Sandstone Transition Forest	CE	CE
5	Swamp Sclerophyll Forest on Coastal Floodplains		E
6	River-Flat Eucalypt Forest on Coastal Floodplains		E
7	Freshwater Wetlands on Coastal Floodplains		E
8	Sydney Freshwater Wetlands		E
9	Swamp Oak Floodplain Forest	E	E
10	Western Sydney Dry Rainforest	CE	E
11	Maroota Sands Swamp Forest		E

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