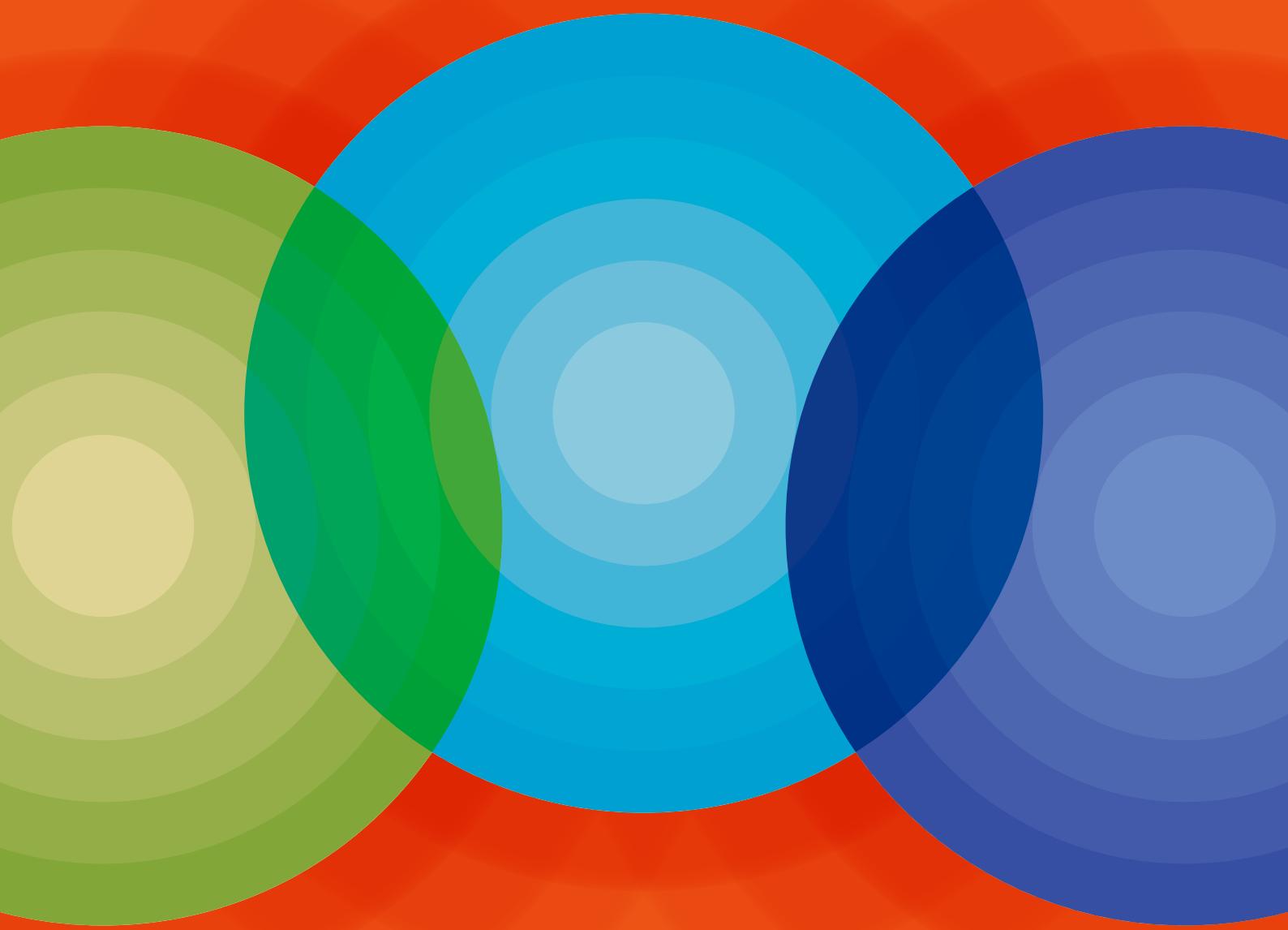


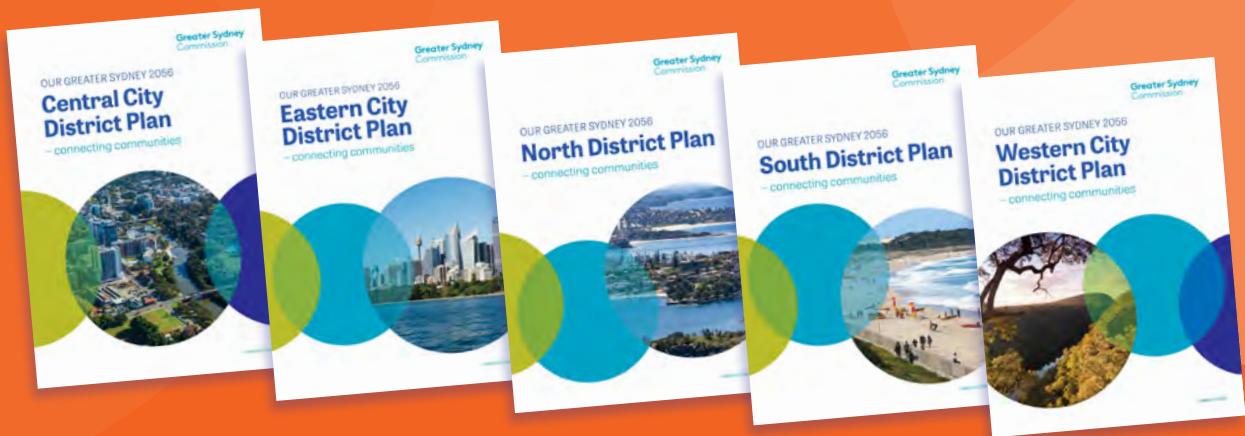
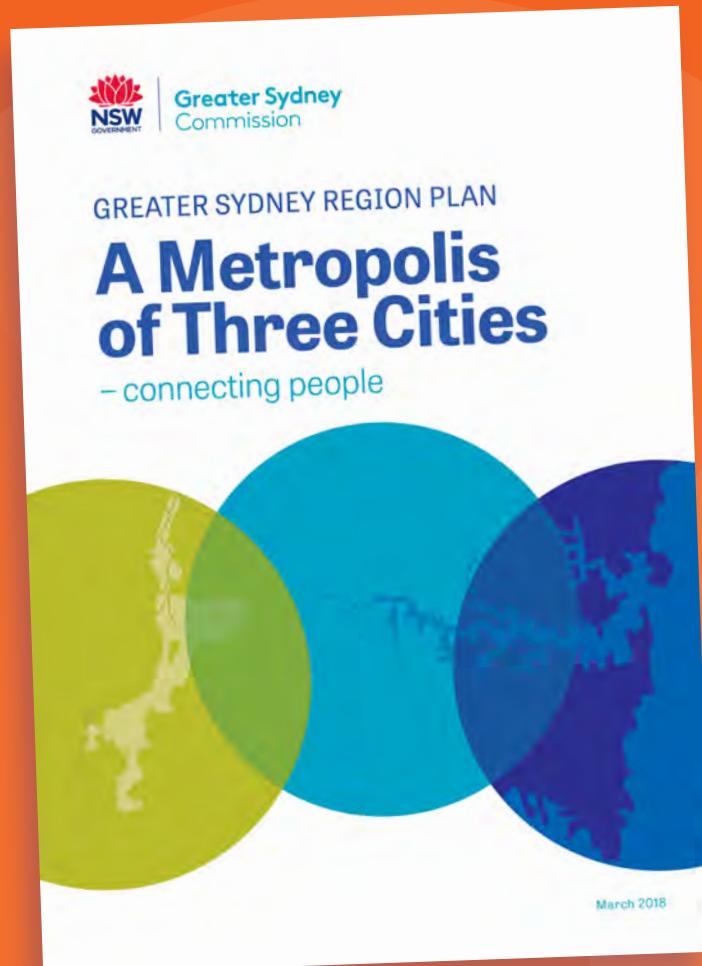


# The Pulse of Greater Sydney

**Measuring what matters  
in the Metropolis**



July 2019  
Updated



# Message from the Chief Commissioner

**Chief Commissioner  
Lucy Hughes Turnbull AO**



The Greater Sydney Region Plan – *A Metropolis of Three Cities* is a 20-year plan with a 40-year vision where everyone more equitably shares in the benefits of the growth and success of Greater Sydney as a liveable, productive and sustainable metropolis.

The Greater Sydney Commission believes that to effectively plan and manage our city it is essential to measure its progress. To start us on this journey we asked the people of Greater Sydney and our fellow government agencies to help us measure what matters.

The Citizens Panel told us they want quality outcomes: jobs closer to where they live, quality education facilities, walkable neighbourhoods with trees, great open space and convenient access to the services they need.

Four overarching indicators have been identified to track implementation of the Region Plan and the five supporting district plans. This is the beginning of regularly ‘taking the pulse’ of Greater Sydney. Over time, the indicators will be expanded as better ways to track progress become available.

This is the first time a metropolitan plan for Greater Sydney will be measured using performance indicators to bring the plan to life. Drawing on data from across government will enable the people of Greater Sydney to see and understand the changes taking place and hold those of us delivering the vision accountable for making progress.

I would like to thank everyone who has contributed to the development of these indicators – the Citizens Panel, councils, peak groups and industry representatives, together with State agencies – as we bring the plans to life.

The Greater Sydney Commission is committed to listening to, and collaborating with, the community to achieve our powerful vision for a metropolis of three cities with quality outcomes for everyone.

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*Updated: 1 August 2019 (to address minor errors and inconsistencies)*

## Acknowledgement of Country

The Greater Sydney Commission acknowledges the traditional owners of the lands that include Greater Sydney and the living culture of these lands. The Commission recognises that the traditional owners have occupied and cared for this Country over countless generations and celebrates their continuing contribution to the life of Greater Sydney.

# 1 Measuring what matters

## 1.1 Introduction

The Greater Sydney Region Plan and five supporting district plans set out a vision to manage growth and change in Greater Sydney. They were developed alongside Transport for NSW's *Future Transport 2056* and Infrastructure NSW's *State Infrastructure Strategy 2018–2038*.

In preparing the Plans, the Greater Sydney Commission heard from stakeholders and the community that it is not enough to simply prepare the Plans, we must also monitor and report on their implementation.

Monitoring is important as it helps us understand progress towards delivering the metropolis of three cities. Reporting provides transparency and accountability and enables State and local government to measure progress and inform future reviews of the Plans.

Objective 40 of the Region Plan – *Plans refined by monitoring and reporting* – sets out the approach to monitor and report on the Plans. In response this report, *The Pulse of Greater Sydney*:

- introduces performance indicators that monitor progress in delivering the vision for Greater Sydney
- reports on the progress of implementation of the Plans by State and local government.

Context data that tracks drivers such as population growth, housing supply, job growth and greenhouse gas emissions across Greater Sydney is available on our website at [www.greater.sydney](http://www.greater.sydney).

Region-wide performance indicators have been formulated and tailored to reflect the specific requirements of Greater Sydney and its districts. They can also be applied at a local level.

*The Pulse of Greater Sydney* is the first comprehensive monitoring and reporting framework for Greater Sydney. We have identified and gathered the most recent publicly available data as no one government agency, council or organisation can do this alone. Over time we expect to expand monitoring and reporting as more data becomes available to help us understand how Greater Sydney grows and changes.

## 1.2 Structure of this report

*The Pulse of Greater Sydney* is structured in three sections.

**Section 1 – Measuring what matters:**

- provides an overview of monitoring and reporting on the Plans
- explains how the performance indicators were developed and summarises the findings
- outlines how the context data is presented on the Greater Sydney Dashboard
- explains the requirements to report on action in the Plans
- sets out next steps.

**Section 2 – Implementing the Greater Sydney Region Plan:**

- measures progress to evolve the metropolis of three cities using the following performance indicators:
  - jobs, education and housing
  - 30-minute city
  - walkable places
  - addressing urban heat
- reports on progress on the actions in the Greater Sydney Region Plan.

**Section 3 – Implementing the district plans:**

- identifies local planning work to reflect or 'give effect to' the district plans
- for each district:
  - summarises progress on implementation
  - applies the performance indicators
- for Western City District summarise progress on the 38 commitments under the Western Sydney City Deal.

*The Pulse of Greater Sydney* is our first step in delivering on our commitment as an independent agency in NSW Government to implement the Plan and be transparent on progress. As we will continue to build on this foundation, we are interested in your feedback. If you have any comments please contact the Greater Sydney Commission at [info@gsc.nsw.gov.au](mailto:info@gsc.nsw.gov.au)

## 1.3 Performance indicators

### How the indicators were developed

The Greater Sydney Region Plan sets a vision for Greater Sydney as a metropolis of three cities where most residents live within 30 minutes (by public transport or walking) of their jobs, education and health facilities, services and great places. Within the Plan are 10 Directions, aligned with this vision, that establish the aspirations for Greater Sydney over the next 40 years.

#### The performance indicators draw on the 10 Directions to measure progress of the Plan's implementation

The development of performance indicators fulfils Action 14 from the Greater Sydney Region Plan and associated district plan actions – *Develop performance indicators in consultation with State agencies and councils that measure the 10 Directions to inform inter-agency, State and local government decision-making*.

**It is important to note that as the Plan spans 20 years, it may be some time before we begin to see change. This first year the indicators establish a starting point from which to measure progress.**

In developing the indicators, the Commission engaged with and listened to people about what matters to them in Greater Sydney. We listened to the community, State agencies (including the NSW Department of Planning, Industry and Environment and Transport for NSW), councils, together with social, environment and industry peak groups. We also hosted a Citizens Panel of 100 people from across Greater Sydney as a key input. Key themes emerged from our engagement, including:

- the desire for jobs to be closer to where people live, together with access to affordable and quality education
- the need for better access to, and reliability of, public transport and more opportunities to walk and cycle safely across the city
- the desire for more trees and open space for place-making and climate resilience, creating a better quality of life
- improved housing choice and affordability, to be able to live close to family and friends within local areas
- feeling safe and socially connected with local access to shared community facilities and events.

Our stakeholders reinforced that cities are multi-functional places with layers of activity and competing demands. It is difficult to capture this complexity in a single metric. We have therefore developed four indicators that draw together the interrelated aspects of the 10 Directions to measure progress towards evolving to a metropolis of three cities.

In this context, the four indicators reinforce the basis of the Greater Sydney Region Plan and the five supporting district plans as follows:

- the key spatial aspects of Greater Sydney – jobs and education opportunities and housing diversity
- the aspiration for a connected metropolis of three cities – 30-minute city
- walkability as an important element of place-making – walkable places
- responding to climate and resilience – addressing urban heat.

**The indicators have been designed to be applied at different geographic scales. This means they can be used to monitor the whole metropolis or a district or a precinct allowing us to compare or aggregate the data.**

Table 1 shows the relationship of the performance indicators to the objectives of the Region Plan.

The indicator matrix (see Figure 1) shows the intersection of the performance indicators with the 10 Directions for a Greater Sydney.

The following pages provide a summary of the Greater Sydney performance indicators: their purpose, goal, findings and future focus. Section 2.1 contains the detailed analysis and findings for the Greater Sydney Region. Section 3 includes a brief analysis of the performance indicators at a district level.

#### Greater Sydney Dashboard

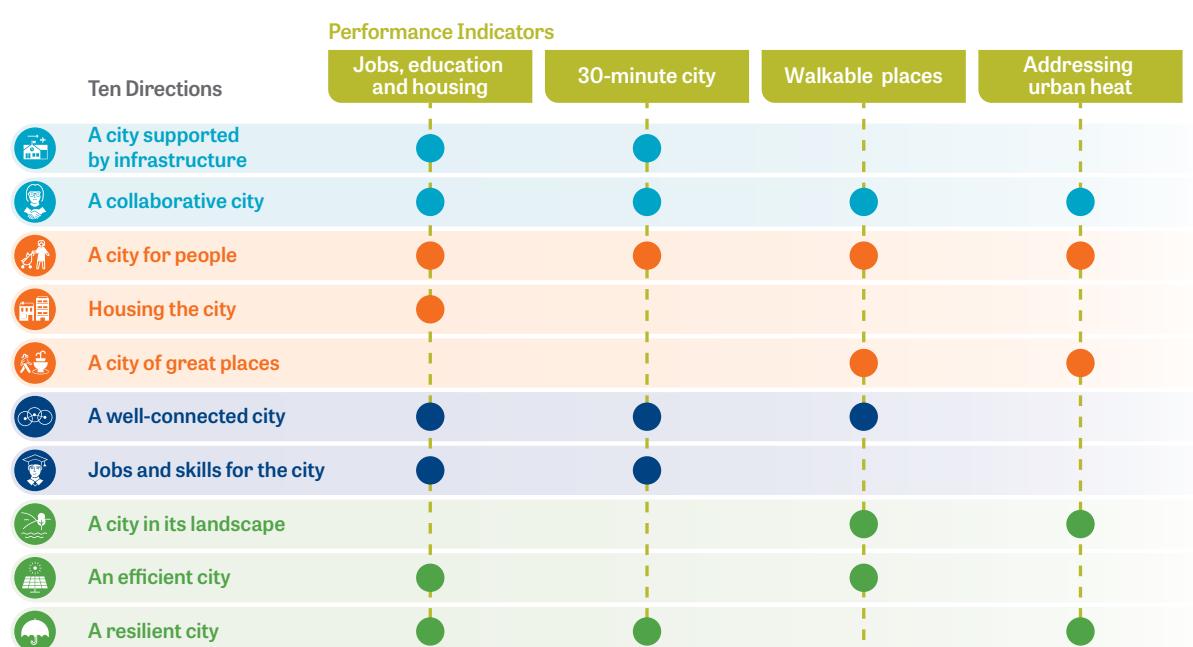
If you want to see the data we have collected to date together with links to sources visit the **Greater Sydney Dashboard** at [www.greater.sydney](http://www.greater.sydney).

#### Source of data

Where possible we use the latest data available, for example data generated by Transport for NSW using current timetables. In many cases we have relied on Census data, such as the journey to work data. Data sources for all of the information provided in the figures are listed under 'References' at the end of the report.

**Table 1:** Relationship of performance indicators (PIs) to the objectives of the Greater Sydney Region Plan

Relevant Greater Sydney Region Plan Objectives	
<b>PI 1: Jobs, education and housing</b>	Evolving to a metropolis of three cities
<p><b>Objective 1:</b> Infrastructure supports the three cities  <b>Objective 6:</b> Services and infrastructure meet communities' changing needs  <b>Objective 10:</b> Greater housing supply  <b>Objective 11:</b> Housing is more diverse and affordable  <b>Objective 15:</b> The Eastern, GPOP and Western Economic Corridors are better connected and more competitive</p>	<p><b>Objective 21:</b> Internationally competitive health, education, research and innovation precincts  <b>Objective 22:</b> Investment and business activities in centres  <b>Objective 23:</b> Industrial and urban services land is planned, retained and managed  <b>Objective 33:</b> A low-carbon city contributes net-zero emissions by 2050 and mitigates climate change  <b>Objective 36:</b> People and places adapt to climate change and future shocks and stresses</p>
<b>PI 2: 30-minute city</b>	Evolving to a connected metropolis of three cities
<p><b>Objective 1:</b> Infrastructure supports the three cities  <b>Objective 6:</b> Services and infrastructure meet communities' changing needs  <b>Objective 14:</b> A Metropolis of Three Cities – integrated land use and transport creates walkable and 30-minute cities</p>	<p><b>Objective 22:</b> Investment and business activities in centres  <b>Objective 36:</b> People and places adapt to climate change and future shocks and stresses</p>
<b>PI 3: Walkable places</b>	Evolving to a liveable metropolis of three cities
<p><b>Objective 7:</b> Communities are healthy resilient and socially connected;  <b>Objective 12:</b> Great places that bring people together  <b>Objective 14:</b> A Metropolis of Three Cities – integrated land use and transport creates walkable and 30-minute cities</p>	<p><b>Objective 31:</b> Public open space is accessible, protected and enhanced  <b>Objective 32:</b> The Green Grid links parks, open spaces, bushland and walking and cycling paths  <b>Objective 33:</b> A low-carbon city contributes net-zero emissions by 2050 and mitigates climate change</p>
<b>PI 4: Addressing urban heat</b>	Evolving to a sustainable metropolis of three cities
<p><b>Objective 7:</b> Communities are healthy resilient and socially connected;  <b>Objective 12:</b> Great places that bring people together  <b>Objective 26:</b> A cool and green parkland city in the South Creek corridor</p>	<p><b>Objective 30:</b> Urban tree canopy cover is increased  <b>Objective 36:</b> People and places adapt to climate change and future shocks and stresses  <b>Objective 38:</b> Heatwaves and extreme heat are managed</p>

**Figure 1:** Indicator matrix

## 8 Measuring what matters

### What the indicators tell us

#### PI 1 Jobs, education and housing

##### Job

##### Education

##### Housing

###### Purpose

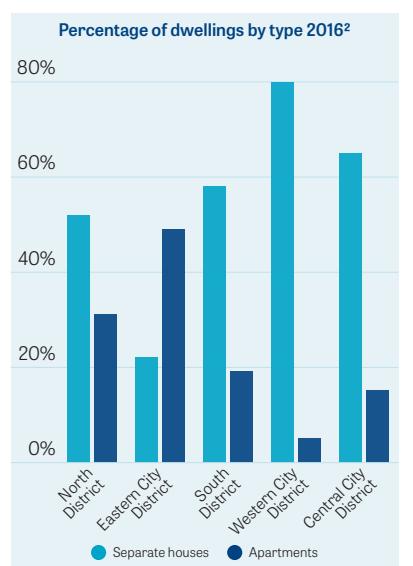
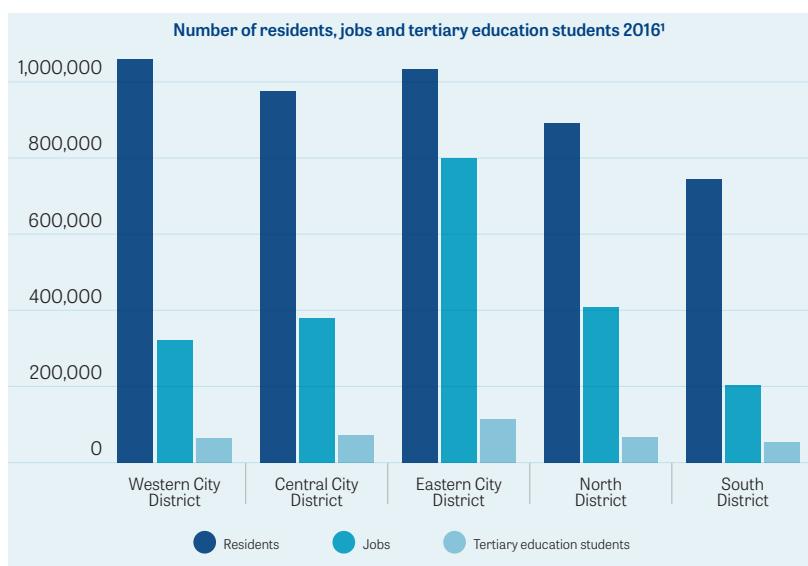
This indicator monitors the spatial aspects of Greater Sydney's development, the places where jobs, education and housing are located. These are fundamental to understanding progress towards achieving the metropolis of three cities.

###### Goal

The goal is better alignment of jobs, education and housing opportunities across the three cities. For jobs and education this means improving access to these opportunities alongside population growth. For housing this means providing a diversity of housing types that respond to changing community preferences and needs at different life stages.

###### Findings

The number of jobs and tertiary education opportunities are greatest in the Eastern City District while housing diversity is lower in the Western City and Central City districts.



###### Future focus

An increase in jobs, particularly knowledge jobs, and tertiary education opportunities in the Western City and Central City districts is needed to address the current imbalance, particularly as the population of these districts is growing at a faster rate than other districts. Growing centres in these districts will assist in creating knowledge jobs which are largely concentrated in metropolitan and strategic centres, economic corridors and health and education precincts.

A greater understanding is needed of the demand for different housing types as the population grows and changes across all parts of Greater Sydney.

We also need to further develop how to best monitor and report on how housing supply is meeting the need for affordable housing.



## PI 2 30-minute city

### Access to metropolitan and strategic centres

#### Purpose

This indicator measures the proportion of residents able to reach their nearest metropolitan centre/cluster or strategic centre using public transport and/or walking within 30 minutes.

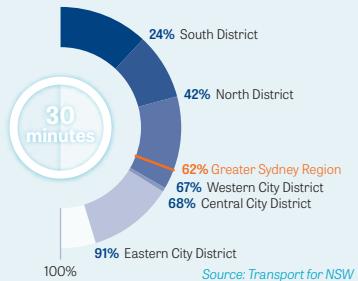
#### Goal

The goal is to improve connectivity within and between the three cities.

#### Findings

Under the current Network Capability Tool, 30-minute access to metropolitan centres varies greatly during 6-10am the morning peak. However, accessibility improves significantly when this is expanded to include access to strategic centres.

**Percentage of dwellings located within 30-minutes of a metropolitan centre by district 2018<sup>3</sup>**



#### Future focus

To improve our understanding of connectivity across Greater Sydney more work is required to further analyse a wider range of data and inputs.

A challenge of the current tool is that it does not account for limited frequency of service nor does it relate to the customer experience. Travel related to social and recreation trips also requires consideration outside of workday peaks and on weekends.



Improve connectivity

## PI 3 Walkable places

### All walking trips

#### Purpose

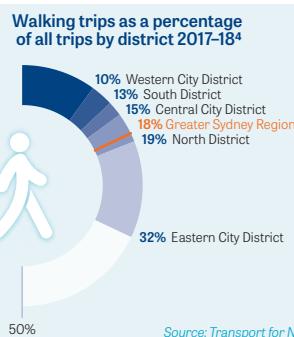
To understand the contribution that walking makes to the liveability of a city this indicator examines walking as a mode of transport generally.

#### Goal

The goal is more convenient walking and cycling access to schools, shops, public transport and open space.

#### Findings

Walking trips are highest in Eastern City District and lowest in Western City District. These districts also have the largest difference between access to open space. Walking as a proportion of all trips is low in South District. Walking and cycling to work is low across all districts.



#### Future focus

Increasing walking and cycling relies on achieving a better balance of the dual function of streets as places for people and movement. Precinct or suburb level analysis will enhance our understanding of walkability and walking and cycling behaviour.



Increase opportunities for trips by walking

## PI 4 Addressing urban heat

### Tree canopy

#### Purpose

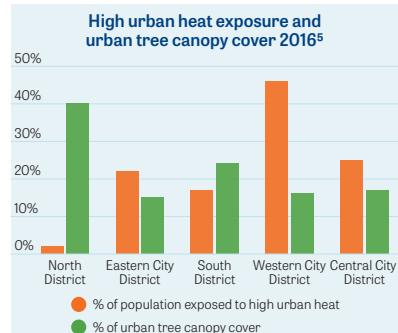
This indicator helps to understand the value of green infrastructure such as tree canopy, vegetation and waterways in reducing the impact of extreme heat on people's health and improving local amenity.

#### Goal

The goal is to increase the contribution that the urban tree canopy can make to the quality of public places, streets and open spaces which improves amenity.

#### Findings

The Western City, Central City, South and Eastern City districts are all affected by urban heat. At the same time, these four districts also have lower tree canopy cover.



#### Future focus

Increasing tree canopy in the urban area is one way to improve amenity and address urban heat to progress the evolution to a metropolis of three sustainable cities and enhance place-making.

Other ways include monitoring how water is incorporated in the landscape and identifying ways to assist communities vulnerable to urban heat such as access to cooler places and community support networks.



Increase tree canopy

## 1.4 Context data – Greater Sydney Dashboard

The Greater Sydney Dashboard on the Commission's website – [www.greater.sydney](http://www.greater.sydney) – is a single point of access to government data that is important to understanding what is happening across Greater Sydney. It is an interactive tool that provides links to a wide range of data sources to help monitor growth and change. It will continue to be developed as new and updated data becomes available.

The Greater Sydney Dashboard includes the context data for the 10 Directions and data used in the performance indicators (see Figure 2).

**Figure 2:** Structure of the Greater Sydney Dashboard



## 1.5 Reporting on the Plans

### Progress on Greater Sydney Region Plan actions

The 15 actions in the Greater Sydney Region Plan identify programs and initiatives to implement the Plan's objectives and strategies. Each action has a lead agency responsible for delivery.

In addition to monitoring change across Greater Sydney against the performance indicators, the summary of the status of these actions in Section 2.2 demonstrates the progress towards delivery of the Plan.

### District Plan implementation

District plans are currently being implemented by councils. The first year of monitoring and reporting on the implementation of the district plans includes (see Section 3):

- progress on council's local strategic planning
- each district's progress in relation to infrastructure and collaboration, liveability, productivity and sustainability
- status of significant State agency projects and programs
- monitoring performance indicators at a district level.

District plan actions are currently guiding local strategic planning by councils.

## 1.6 What's next?

*The Pulse of Greater Sydney* creates a foundation for us to understand how Greater Sydney is tracking towards achieving the vision for *A Metropolis of Three Cities*. It will be updated and published annually. The Commission's annual report will also provide updates on the actions of the Greater Sydney Region Plan and the five district plans.

As we develop the indicators some may be difficult to measure at a Region or even district scale. In the short to medium-term they may be best monitored at a precinct level.

Over the next 12 months additional parallel activities to assist monitoring and reporting of the Plans will include:

- performance indicator expansion and refinement to capture a broader range of issues relevant to the Plans
- regular updates of context data on the Dashboard as new information becomes available
- State agency progress on delivering Region Plan actions
- councils' delivery of local strategic planning statements and updates to local environmental plans.

# 2 Implementing the Greater Sydney Region Plan

## 2.1 Greater Sydney performance indicators

### PI 1: Jobs, education and housing

#### Purpose

This indicator monitors the spatial aspects of Greater Sydney's development, the places where jobs, education and housing are located. These are fundamental to understanding progress towards achieving the metropolis of three cities.

#### Goal

The goal is better alignment of jobs, education and housing opportunities across the three cities. For jobs and education this means improving access to these opportunities alongside population growth. For housing this means providing a diversity of housing types that respond to changing community preferences and needs at different life stages.

#### Measures

- Job containment and distribution by types
- Education participation
- Housing types

The historical settlement pattern of the Greater Sydney Region has seen the concentration of jobs, economic activity and tertiary education institutions in the Eastern Harbour City, reinforced by the radial rail network. As the population grows rebalancing social and economic opportunities can leverage that growth and deliver benefits more equitably across Greater Sydney.

Within the next 40 years almost half of the population of Greater Sydney will live west of Parramatta.<sup>6</sup> Having three cities, each with supporting metropolitan and strategic centres will mean people live closer to jobs, city-shaping and city-serving infrastructure, entertainment and cultural facilities.

A greater distribution of housing types will provide greater choice as the community grows and people's needs change. This is required to match local housing demand, changing demographics and the needs of the community at different life stages. These considerations also include a range of housing types, tenures and price points together with rental accommodation for lower income households and social housing for the most vulnerable.<sup>7</sup>

#### Measures

##### *Distribution and types of jobs*

Between 2006 and 2016 Greater Sydney's total workforce increased from 1.6 million to 2.1 million. A further increase of 817,000 jobs is projected by 2036.<sup>8</sup> However, this jobs growth has been uneven across the Region (see Figure 3). While 78 per cent of residents of the Eastern City District live and work within their district (referred to as job containment), this compares with 60 per cent in North District, 57 per cent in Western City District, 52 per cent in Central City District and only 43 per cent in South District.

**Figure 3:** Job containment by district 2016 (percentage of people who live and work within the same district; the arrows show intensity of movement between districts)<sup>9</sup>



Part of this need to travel is because 38 per cent of the 2.1 million jobs in Greater Sydney in 2016 were in the Eastern City District. As shown in Figure 4, the North District contained 19 per cent of the Region's jobs; Central City District 18 per cent; Western City District 15 per cent and the South District 10 per cent.

It is not just job locations but also the types of jobs in those locations that need to be considered. Figure 4 also shows the proportion of jobs in the knowledge and professional services sector (also referred to as knowledge jobs) is highest in the Eastern City District. By comparison, population serving jobs generally have an even distribution across the Region.

#### ***Education participation***

Across Greater Sydney in 2016 more than half of all students were attending primary or secondary school, signalling future demand for tertiary education (university and technical and other vocational education and training, or TAFE) (see Figure 5). As a share of total student population, the proportion of local and international students attending university is highest in Eastern City District while the proportion attending TAFE is consistent across all districts.

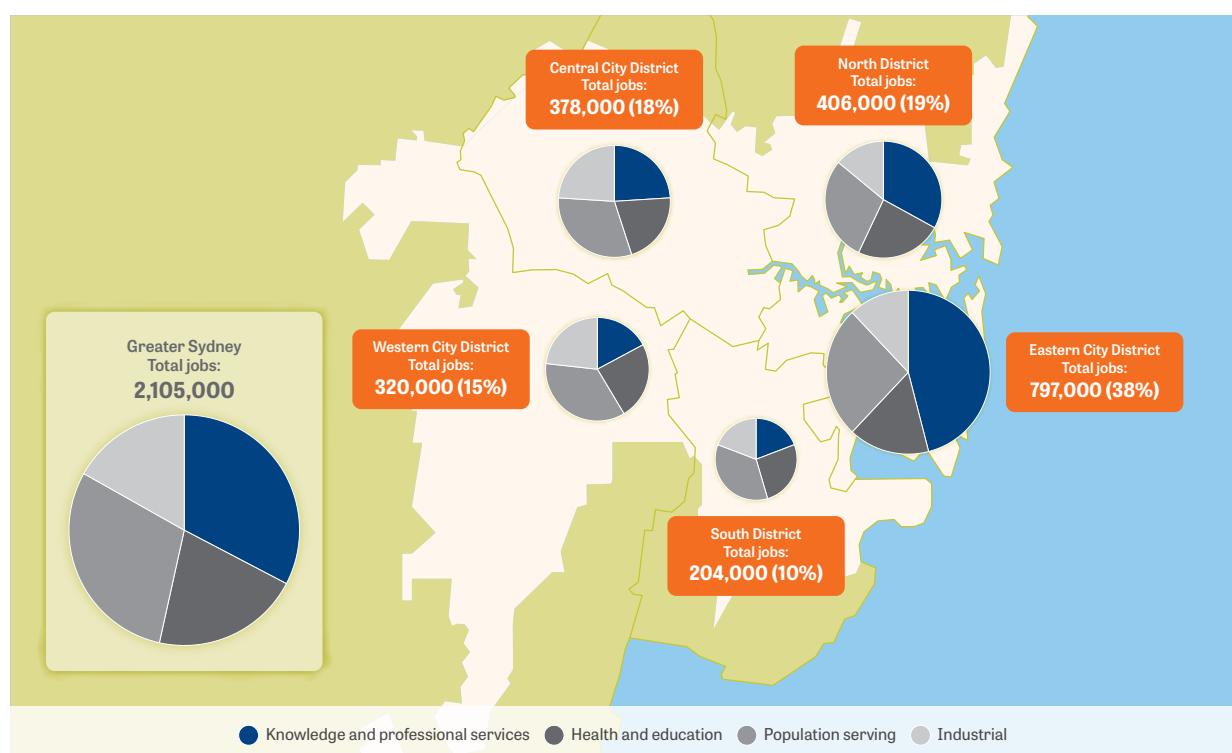
Over the ten years to 2016, the number of students attending university across Greater Sydney increased by 64 per cent. This is due to a number of factors including the city's increased population demand for tertiary institution places from local and international students.

#### ***Housing***

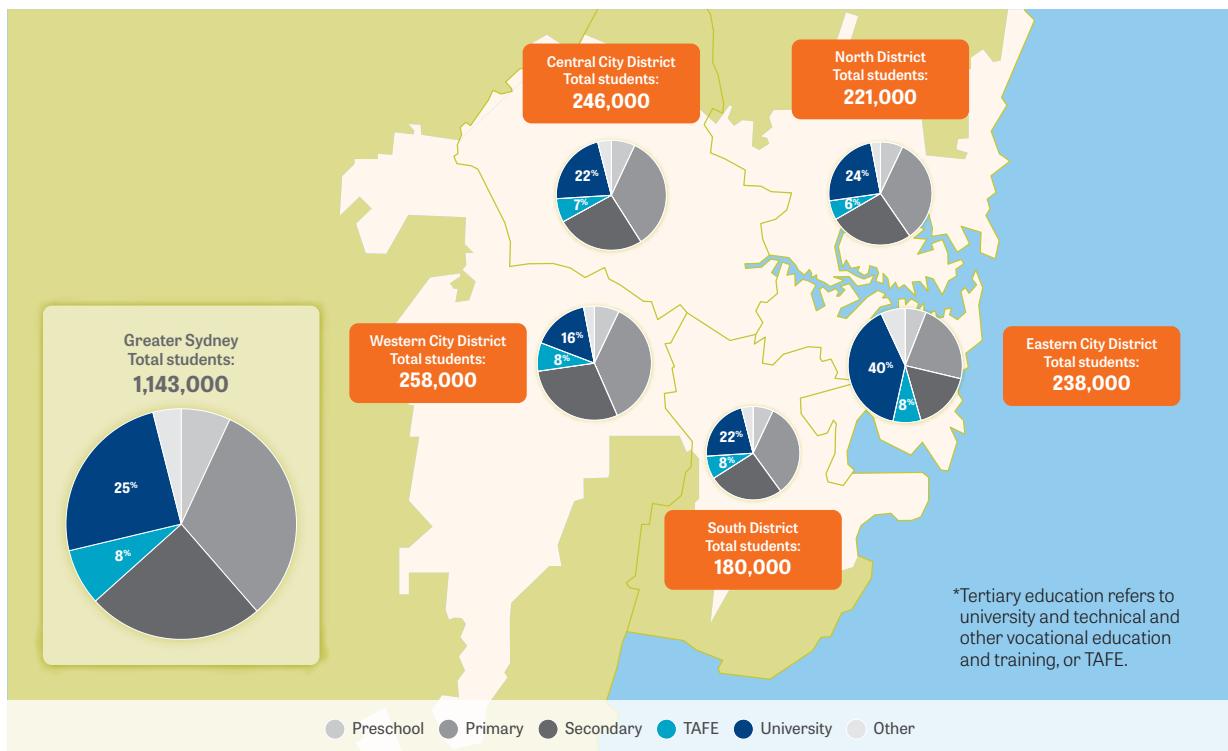
Household types and dwelling types vary across the Region. In 2016, more than half the Region's dwellings were separate houses (54 per cent), while 25 per cent were apartments and 21 per cent medium density dwellings (see Figure 6). The main household types were 36 per cent couples with children, 22 per cent couples with no children and 20 per cent lone person.

The Eastern City District has been, and continues to be, characterised by more apartments (49 per cent) and smaller households whereas the Western City District has more separate houses (80 per cent) and larger households. However our analysis is showing this gap is narrowing.

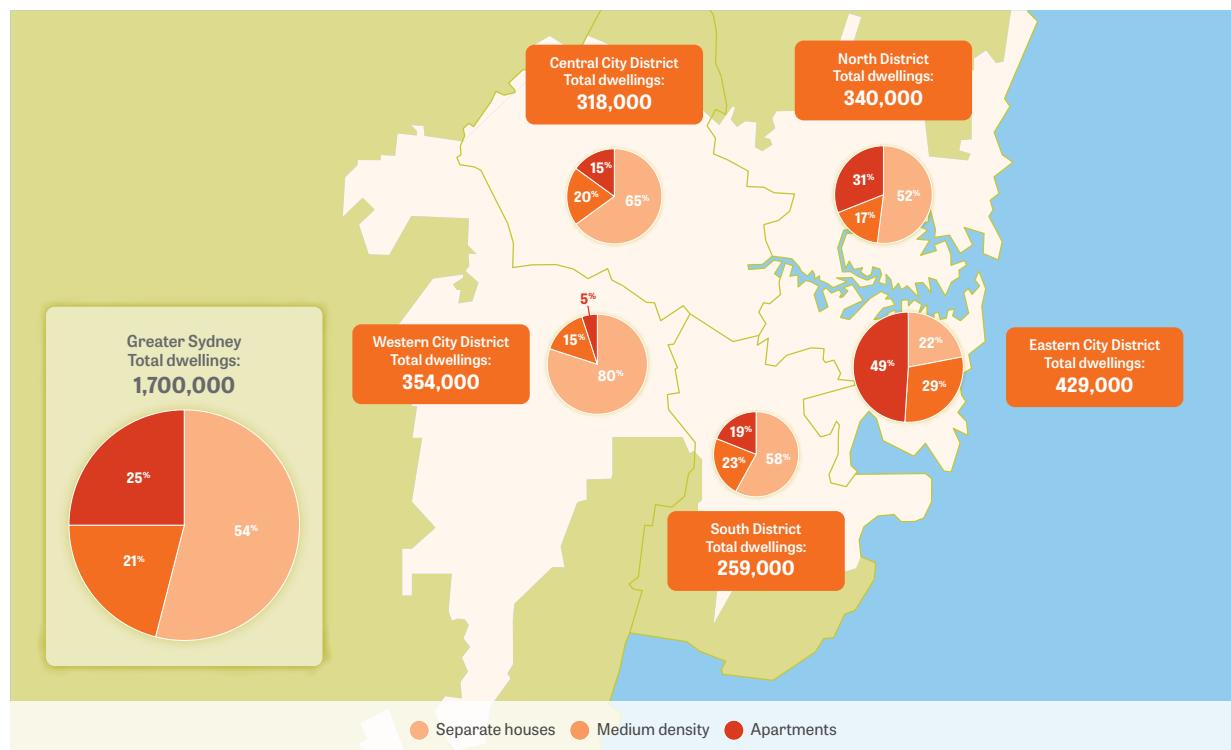
**Figure 4:** Greater Sydney and district job distribution by type 2016<sup>10</sup>



**Figure 5:** Greater Sydney and district percentage of tertiary education\* students 2016<sup>11</sup>



**Figure 6:** Greater Sydney and Districts housing types 2016<sup>12</sup>



The proportion of apartments increased markedly across all districts in the decade to 2016 compared to the increase of separate houses and medium density. The largest increase was in the Central City District where the number of apartments grew by 75 per cent.<sup>13</sup>

In the same period (2006 to 2016), the largest proportional increases in household types across Greater Sydney were 29 per cent in group households, 18 per cent couples with children and 16 per cent couples with no children. In the Eastern City and Central City districts the largest proportional increase was in group households at around 40 per cent.

Research on housing market areas shows there is a preference for people to move and age within their local communities. Research also points to the growing housing affordability challenges across Greater Sydney.

### **Findings and future focus**

The number of jobs and tertiary education opportunities are greatest in the Eastern City District while housing diversity is lower in the Western City and Central City districts.

An increase in jobs, particularly knowledge jobs, and tertiary education opportunities in the Western City and Central City districts is needed to address the current imbalance, particularly as the population of these districts is growing at a faster rate than other districts. Growing centres in these districts will assist in creating knowledge jobs which are largely concentrated in metropolitan and strategic centres, economic corridors and health and education precincts.

A greater understanding is needed of the demand for different housing types as the population grows and changes across all parts of Greater Sydney. Population projections in the Western City and Central City districts show an increase in the proportion of older people which will require a range of housing responses.

We also need to further develop how to best monitor and report on how housing supply is meeting the need for affordable housing. The Region Plan identifies housing affordability is a significant issue and Objective 11 sets out a program to introduce affordable rental housing targets. Following the development of a framework to deliver affordable rental housing, data will be collected to measure progress towards that target.

## PI 2: 30-minute city

### Purpose

This indicator measures the proportion of residents able to reach their nearest metropolitan centre/cluster or strategic centre using public transport and/or walking within 30 minutes.

### Goal

The goal is to improve connectivity within and between the three cities.

### Measures

Percentage of dwellings within 30 minutes of the nearest metropolitan and strategic centre using the public transport network and/or walking during the morning peak.

Focusing on the connections between where people live and where they work underpins the idea of a 30-minute city, which considers 30-minute access for residents:

- in each of the three cities to their nearest **metropolitan centre/cluster** by public and active transport<sup>14</sup>
- in each of the five districts to their nearest **strategic centre** by public and active transport seven days a week.<sup>15</sup>

The 30-minute city vision responds to the projected increase in the number of journeys each day (36 per cent) in Greater Sydney to 15 million trips a day by 2036.<sup>16</sup> In 2016, 50 per cent of all Greater Sydney jobs were in metropolitan and strategic centres<sup>17</sup> highlighting the importance of connections to centres. Beyond connecting people to jobs, services and opportunities, the 30-minute city will help

to lower greenhouse gas emissions,<sup>18</sup> and boost economic competitiveness by creating a more attractive place for investment, businesses and skilled workers.<sup>19</sup>

### Measures

#### *Network Capability Tool*

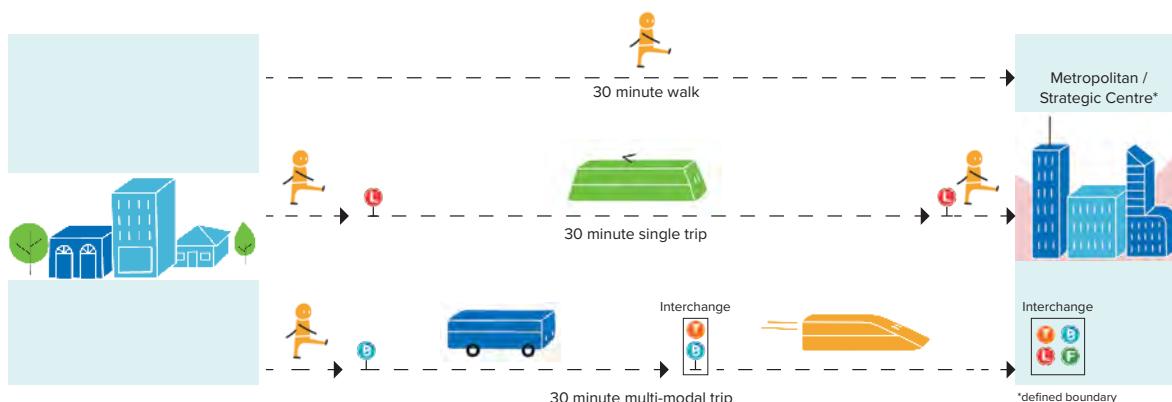
There are different ways to measure whether Greater Sydney is a 30-minute city. A new Network Capability Tool is being developed by Transport for NSW. Using public transport timetables, it calculates 30-minute travel based on current infrastructure and service provision by public transport and/or walking (see Figure 7).

The tool demonstrates the proportion of dwellings in each district from which residents can reach their nearest metropolitan or strategic centre within 30 minutes. This includes dwellings from which at least one public transport trip will enable the resident to reach a relevant centre within 30 minutes during the morning peak.

**Metropolitan centres** provide a concentration of knowledge jobs and a wide range of goods and services. The metropolitan centres of Greater Sydney comprise the Harbour CBD (which includes North Sydney CBD), Greater Parramatta and the Western City metropolitan cluster of Liverpool, Greater Penrith, Campbelltown–Macarthur and the planned Badgerys Creek Aerotropolis.

**Strategic centres** have a mix of land uses including commercial and residential, high levels of private investment and are accessible by walking and cycling. There are 34 strategic centres across Greater Sydney.<sup>20</sup>

**Figure 7:** Transport for NSW Network Capability Tool assumptions for 30-minute access<sup>21</sup>



The travel time includes assumptions about walking time from each dwelling to a transit stop. Where the trip requires interchange, walking transfer and wait times between trips are included. It also includes walking trips of up to 30 minutes.

The tool tests 6–10am and 7–9am peaks with and without a three minute waiting time at the first stop. The tool is also being developed to allow detailed analysis at a local level to better measure public transport trips.

As the current tool is under development and uses a different methodology, at this stage we are unable to compare its findings to figures published in *Future Transport 2056*, which used Transport for NSW's strategic transport model.

### **30-minute access to metropolitan centres/cluster**

Using the Network Capability Tool, in 2018, 62 per cent of dwellings in Greater Sydney are located, such that residents had access to a timetabled public transport service that arrived within 30 minutes at a metropolitan centre/cluster during the morning peak between 6–10 am (see Figure 8). Figure 9 demonstrates how this measure changes when assumptions such as wait time and hour of travel are altered.

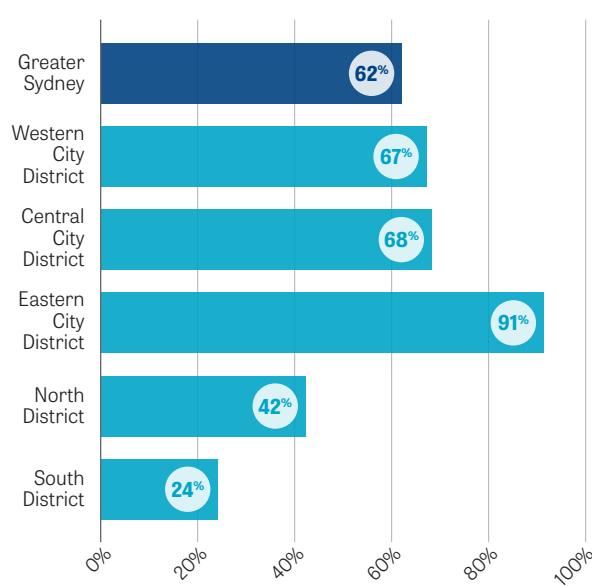
In the Eastern City District, 91 per cent of dwellings are located such that residents can access a metropolitan centre by public transport in 30 minutes. In the Western City and Central City districts this is approximately 70 per cent. In North and South districts these proportions are 42 per cent and 24 per cent respectively.

### **30-minute access to metropolitan and strategic centres**

When strategic centres are also included, 95 per cent of dwellings in Greater Sydney are located with access to a timetabled public transport service in 2018 that arrived within 30 minutes during the morning peak between 6–10am. This includes dwellings where people can walk to the centre within 30 minutes (see Figure 10).

Notably, the Western City District, at 84 per cent, has the lowest capability for 30-minute access to a metropolitan or strategic centre using current infrastructure and services.

**Figure 8:** Percentage of dwellings located within 30 minutes of a metropolitan centre or cluster using the Network Capability Tool (6–10am) 2018<sup>22</sup>



### **Findings and future focus**

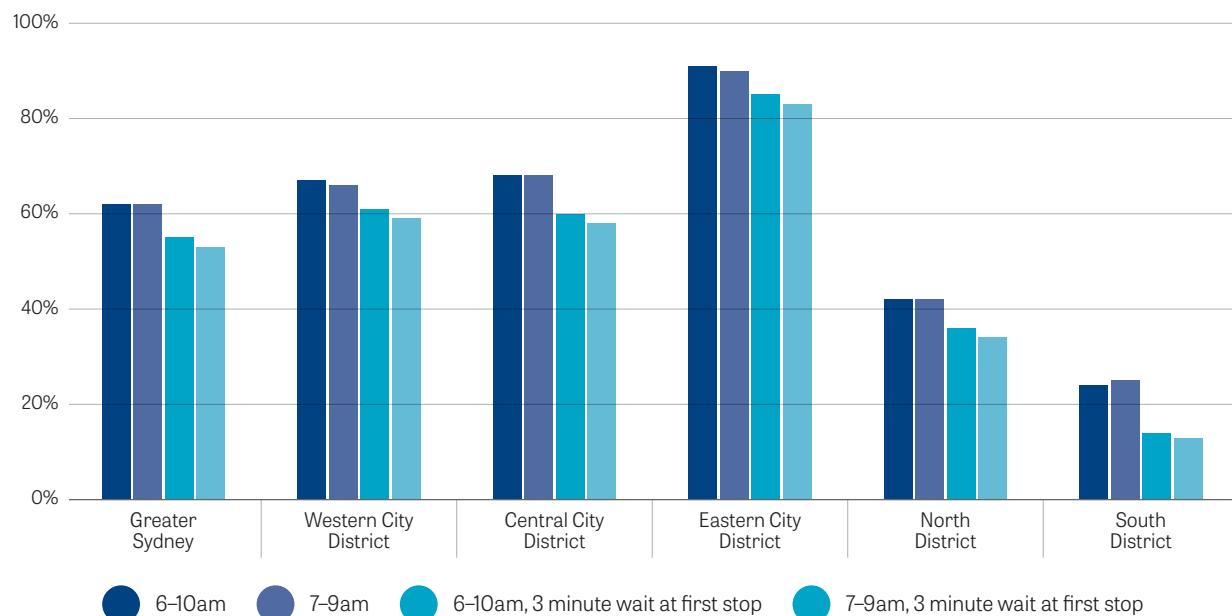
Under the current Network Capability Tool, 30-minute access to metropolitan centres/cluster varies greatly during 6–10am the morning peak. However, accessibility improves significantly when this is expanded to include access to strategic centres.

To improve our understanding of connectivity across Greater Sydney more work is required to further analyse a wider range of data (for example services and timetables) and inputs (for example travel preferences).

A challenge of the current tool is that whilst it shows high levels of 30-minute access in many of the districts to both metropolitan and strategic centres it does not account for limited frequency of service during the period measured nor does it relate to the customer experience. This means important factors, such as infrequent services and delays during these peak periods are not yet captured in the analysis.

The tool also reveals the importance of integrating land use and transport in the metropolis. For example, the North District has a low level of 30-minute access to a metropolitan centre, but a high level of access when it includes strategic centres that contain some of the Region's highest concentrations of employment - such as Macquarie Park and Chatswood – which emphasise the District's high level of job containment. In a similar way, there is a low level

**Figure 9:** Percentage of dwellings located within 30-minutes of a metropolitan centre or cluster using the Network Capability Tool with various assumptions 2018<sup>23</sup>

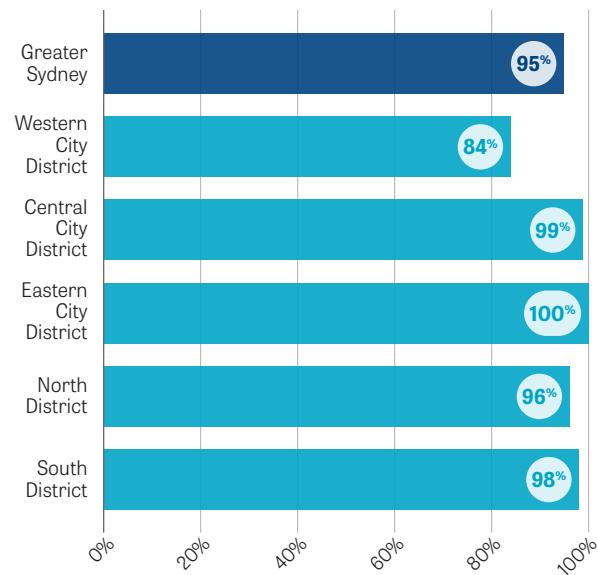


of 30-minute access to a metropolitan centre for the South District but high level of access to high employment areas such as Sydney Airport / Mascot.

Travel related to social and recreation trips also requires consideration. Metropolitan and strategic centres contain significant retail and recreation / entertainment venues, where accessibility may be important at times outside of workday peaks and on weekends.

It is also valuable to develop a more detailed precinct-level analysis. This would include the travel experience, destinations and purpose of travel, as well as examination of the reliability, capacity and accessibility of timetabled services.

**Figure 10:** Percentage of dwellings located within 30-minutes of a metropolitan or strategic centre using the Network Capability Tool (6-10am) 2018<sup>24</sup>



## PI 3: Walkable places

### Purpose

To understand the contribution that walking makes to the liveability of a city this indicator examines walking as a mode of transport generally.

### Goal

The goal is more convenient walking and cycling access to schools, shops, public transport and open space.

### Measures

- Proportion of trips by walking
- Travel mode to work
- Access to open space

Two key factors influence how walkable a place is: the walkability of the built environment and the amount of walking activity undertaken. Walkability describes the factors within the built environment that make it convenient, comfortable and safe to walk, while walking activity measures the actual amount of pedestrian movement undertaken in a location.

The key factors influencing walkability are the density and variety of land use mix and street connectivity such as the number of intersections or crossings per square kilometre. Other factors include the amenity of the street environment (shade, tree canopy, low-speed streets), wide footpaths and facilities (seats, water fountains).

A 20-minute walk built into a person's daily routine reduces the risk of early death by 22 per cent and increases a person's mental health by 33 per cent.<sup>25</sup> To improve opportunities to walk and cycle, places need safe, convenient and direct access to mixed-use centres and public transport.

Walking distances from dwellings to open space is an important part of liveability, particularly in areas of higher density. Open space networks such as the Greater Sydney Green Grid provide safe and convenient walking and cycling links to local centres, transport hubs and recreation.

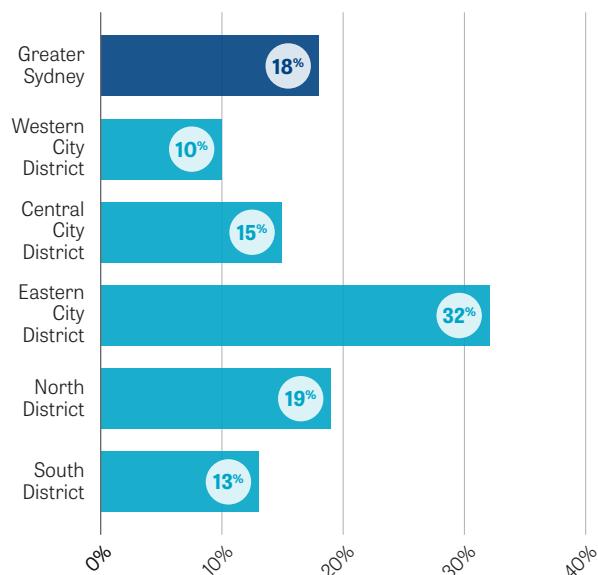
Transport for NSW is investigating how walking activity can be better measured through big data and a network of pedestrian counters at set locations.

### Measures

#### *Trips by walking*

Based on the Household Travel Survey, 18 per cent of trips in Greater Sydney in 2017–18 were on foot (see Figure 11). However this regional figure disguises the variations in the proportion of trips by walking by district. The Eastern City District is significantly above the regional figure at 32 per cent whereas the other districts are either close to or below the regional figure.

**Figure 11:** Walking trips as a percentage of all trips 2017–18<sup>26</sup>

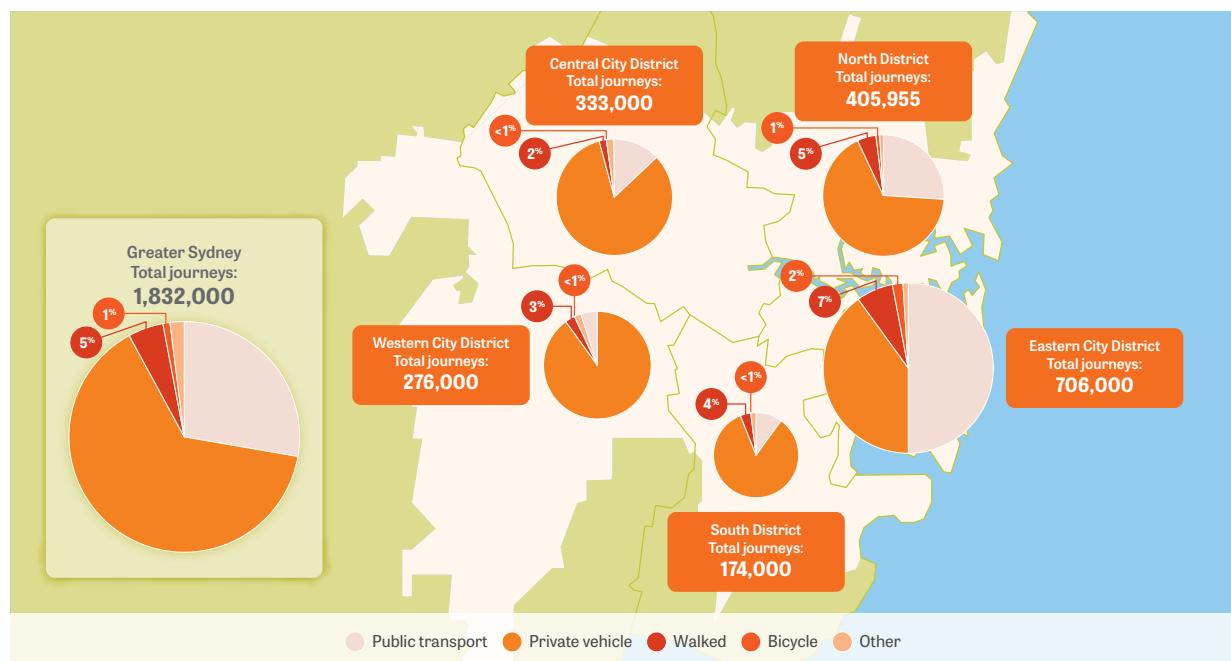


#### *Travel to work*

For the journey to work, most trips are by private vehicle and public transport. Walking and cycling represents only a small proportion with five per cent of people walking and one per cent of people cycling to work in Greater Sydney (see Figure 12). There are variations across the districts with seven per cent of journeys to work by walking in the Eastern City District and two per cent in the Central City District. The Eastern City District also has the highest proportion of cycling to work at two per cent.

Figure 12 also shows the variation in the proportion of trips to work by public transport across the districts, which is a factor in the 30-minute city indicator. Most of these trips start or end with a walk.

**Figure 12:** Greater Sydney and district travel mode to work 2016<sup>27</sup>



### Access to open space

There are several ways to measure access to open space. The approach in this indicator measures walking distance using the street network and pathways between dwellings and open space. In 2016, 65 per cent of people living in Greater Sydney's urban area were within a 400 metre walk of local open space (see Figure 13). This demonstrates generally moderate to high levels of access to open space. The consideration of additional characteristics, such as topography, quality and intensity of use, will enhance our understanding.

### Findings and future focus

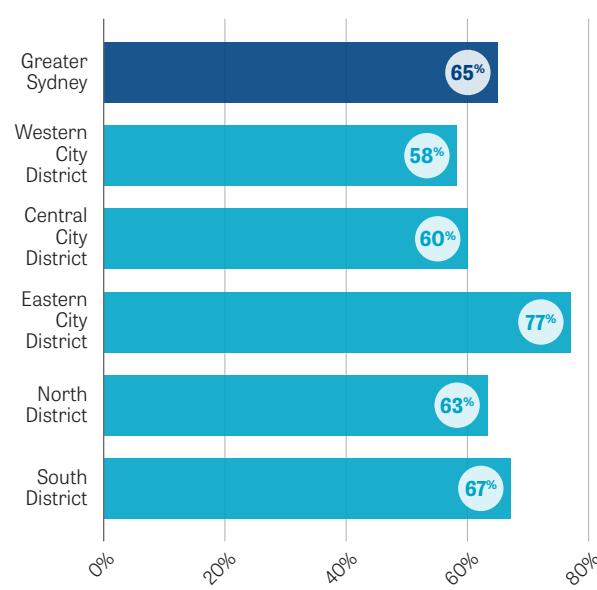
Walking trips are highest in the Eastern City District and lowest in the Western City District. These districts also have the largest difference between access to open space. Walking as a proportion of all trips is low in South District. Walking and cycling to work is low across all districts.

Increasing walking and cycling in Greater Sydney relies on achieving a better balance of the dual function of streets as places for people and movement. Precinct or suburb level analysis will enhance our understanding of walkability and walking and cycling behaviour.

Locations for new jobs and housing, and the prioritisation of transport, health, schools and social infrastructure investment should consider walkability.

There are opportunities to leverage existing access to open space to improve walking and cycling networks in all districts. In developing new areas such as the South Creek corridor, there are great opportunities for walking and cycling to be a fundamental driver of liveability and health outcomes.<sup>28</sup>

**Figure 13:** Percentage of residents with access to public open space within 400 metres 2016<sup>29</sup>



## PI 4: Addressing urban heat

### Purpose

This indicator helps to understand the value of green infrastructure such as tree canopy, vegetation and waterways in reducing the impact of extreme heat on people's health and improving local amenity.

### Goal

The goal is to increase the contribution that the urban tree canopy can make to the quality of public places, streets and open spaces which improves amenity.

### Measures

- Number of hot days (>35°C)
- Urban heat
- Tree canopy cover in the urban area

Hot days and heatwaves represent a significant hazard in the Greater Sydney Region. Extreme heat and heat waves can have a significant impact on people's health and local amenity, with some people more vulnerable to the effects of heat than others. Over the last 100 years heatwaves have caused more deaths in Australia than any other natural hazard.<sup>30</sup>

Green infrastructure such as tree canopy can enhance the amenity of dwellings, neighbourhoods, streets and centres. It is also a key component of Greater Sydney's highly valued scenic landscapes. Research shows that trees provide shade, reflect heat and transpire through leaves releasing water into the atmosphere. There is a relationship between tree canopy cover and land surface temperatures. In some instances, a 10 per cent increase in tree canopy cover can lower land surface temperature by 1.13 degrees Celsius.<sup>31</sup>

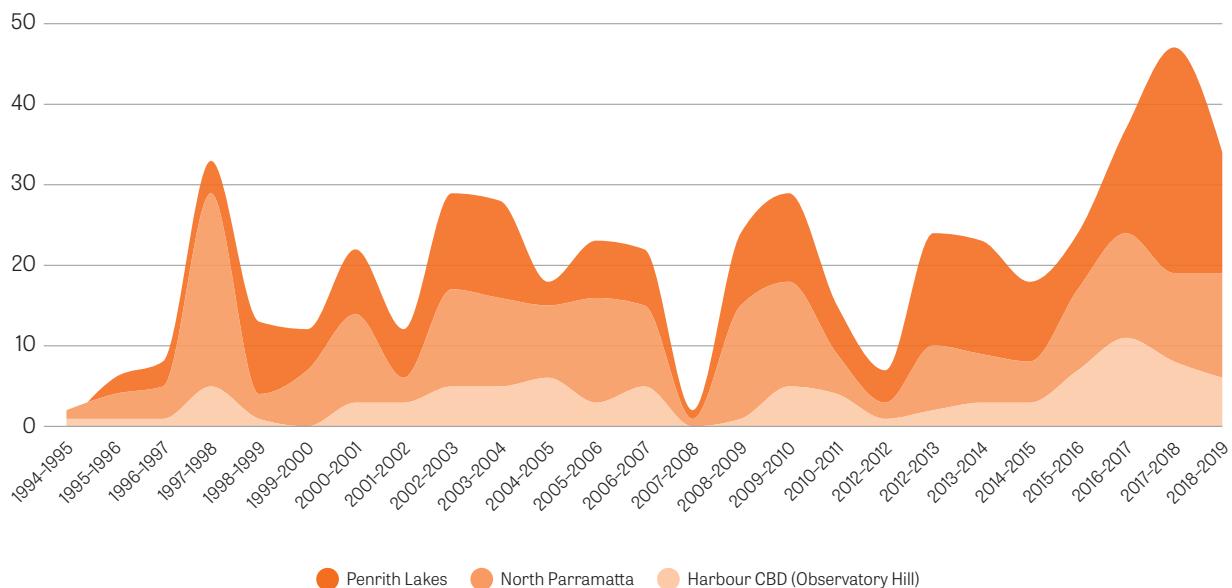
### Measures

#### *Hot days and heatwaves*

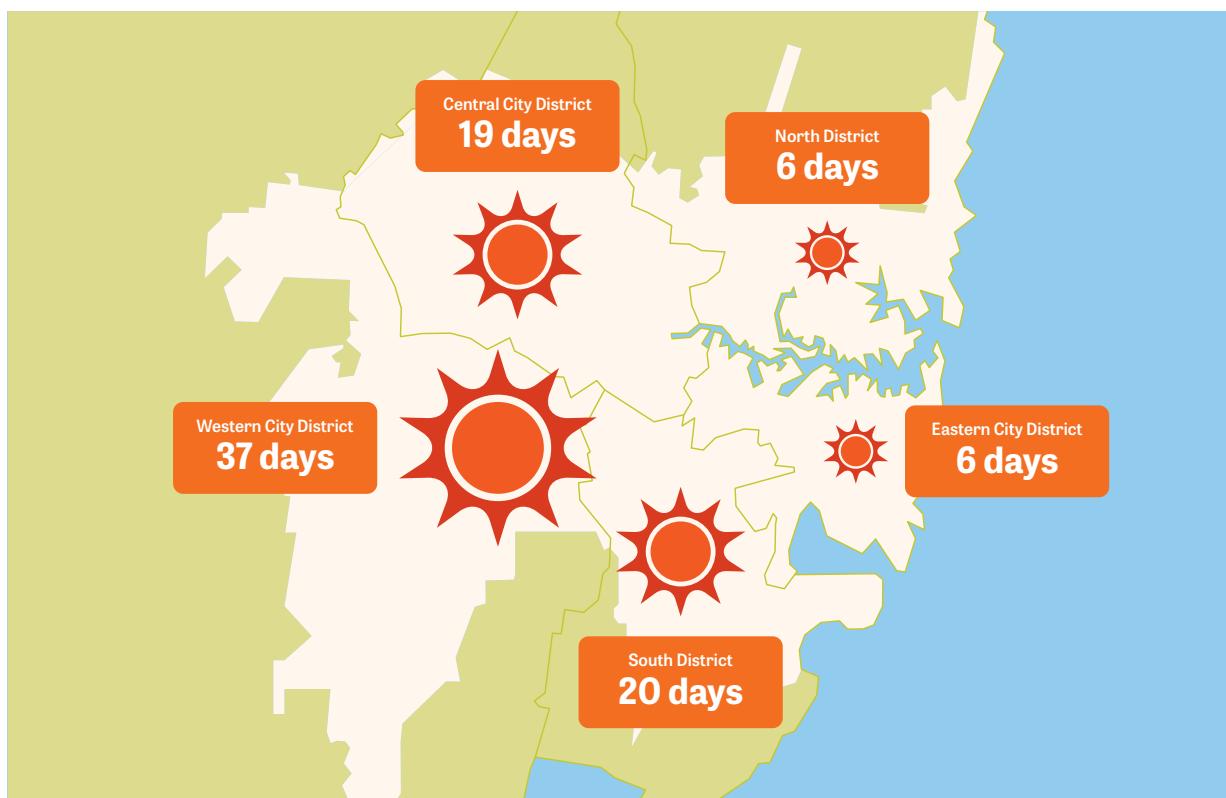
Hot days are defined as those above 35 degrees Celsius. Heatwaves occur when temperatures remain unusually high for consecutive days. Penrith (Western City District) experiences more hot days on average than Greater Parramatta in Central City District (measured at North Parramatta). However, both these centres experience significantly more hot days on average than the Harbour CBD in the Eastern City District (measured at Observatory Hill) (see Figure 14).

During the summer of 2018–19, the Harbour CBD (Eastern City District) and Terrey Hills (North District) experienced only six hot days over 35 degrees Celsius. In contrast, Penrith (Western City District) experienced 37 hot days, Parramatta (Central City District) had 19 hot days and Bankstown (South District) had 20 hot days (see Figure 15).

**Figure 14:** Number of days over 35°C (July 1994 – June 2019)<sup>32</sup>



**Figure 15:** Number of days over 35°C (July 2018 – June 2019)<sup>33</sup>



### Urban heat

Cities create their own microclimates by influencing the surrounding atmosphere and interacting with climate processes. Localised warming – caused by factors such as buildings, roads and other hard and dark surfaces that absorb and store heat – creates an urban heat island effect.<sup>34</sup> This means urban surface temperatures can be 10 to 20 degrees Celsius higher than the air temperatures.

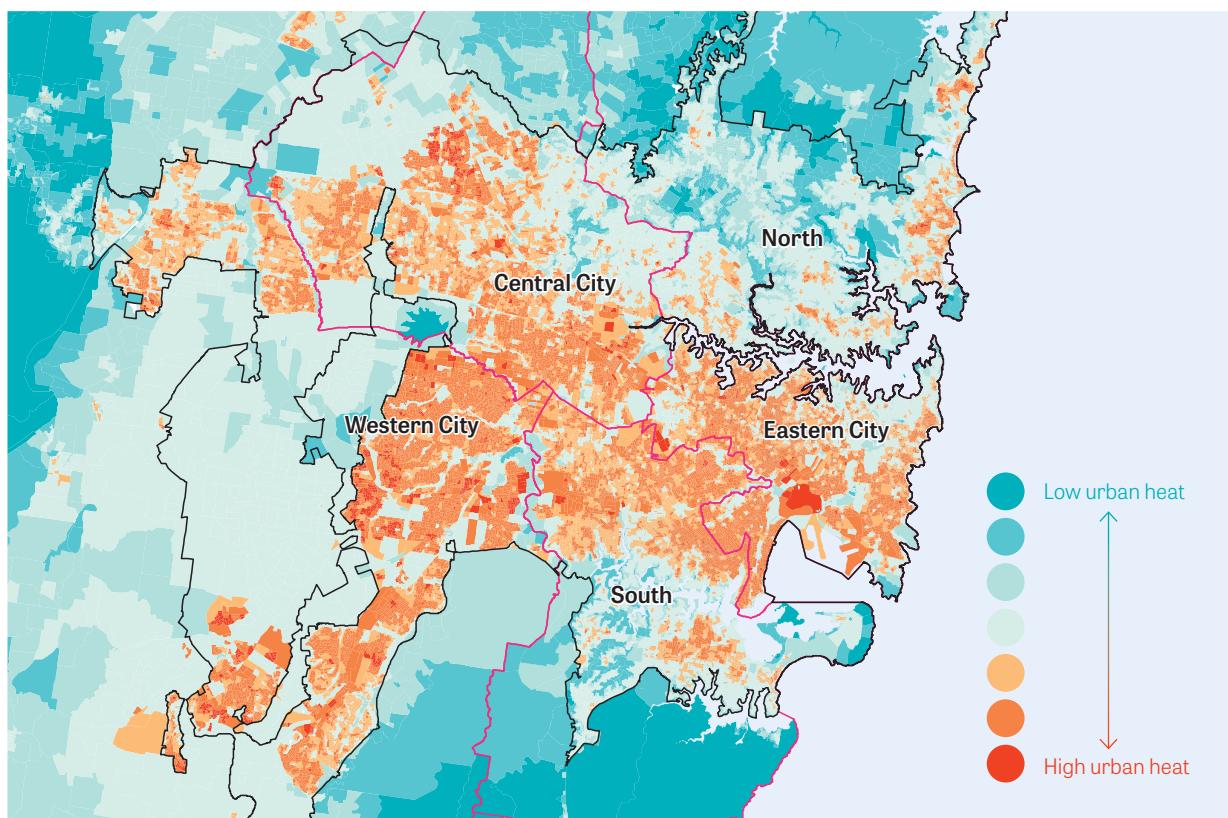
Mapping of the urban heat island (UHI) effect across the Region shows it is highest in the Western City District and lowest in the North District (see Figure 16). This is reinforced when the urban heat island effect is considered in relation to the distribution of the population (Figure 17). It also shows that there are significant urban heat issues in Eastern City District.

The community's resilience to urban heat can be considered through a multi-faceted model of vulnerability that combines considerations such as age (very young and very old) and socio-economic profiles with urban heat profiles such as areas of extreme heat.<sup>35</sup> This shows a high coincidence of high levels of urban heat and urban vulnerability across parts of Western City, Central City and South districts.

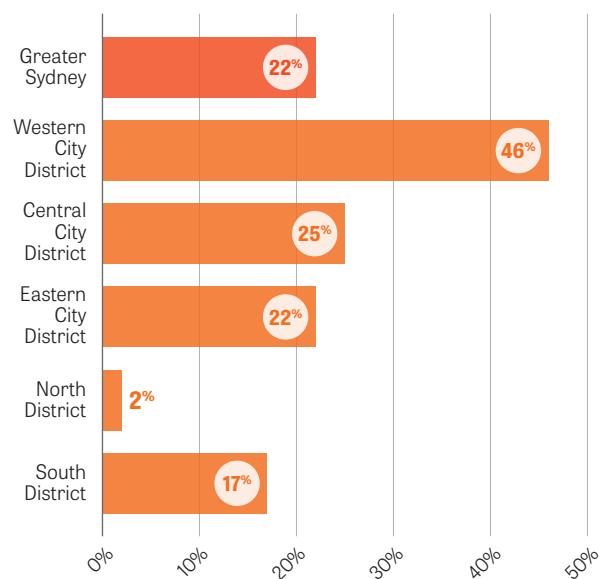
### Urban tree canopy cover

In 2016, the total tree canopy cover of the urban area of Greater Sydney was 21 per cent. This excludes the large protected natural areas and the metropolitan rural areas that surround the urban area. The urban area of the North District has almost 40 per cent tree canopy cover. All the remaining districts are much lower (see Figure 18 and 19).

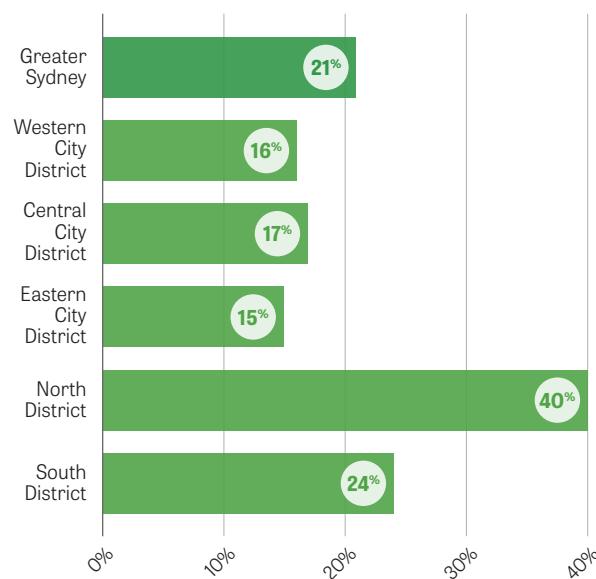
**Figure 16:** Greater Sydney and district urban heat island 2016<sup>36</sup>



**Figure 17:** Percentage of residents with exposure to high urban heat 2016<sup>37</sup>



**Figure 18:** Percentage of urban tree canopy cover 2016<sup>38</sup>



## Findings and future focus

The Western City, Central City, South and Eastern City districts are all affected by urban heat. At the same time, these four districts also have lower tree canopy cover.

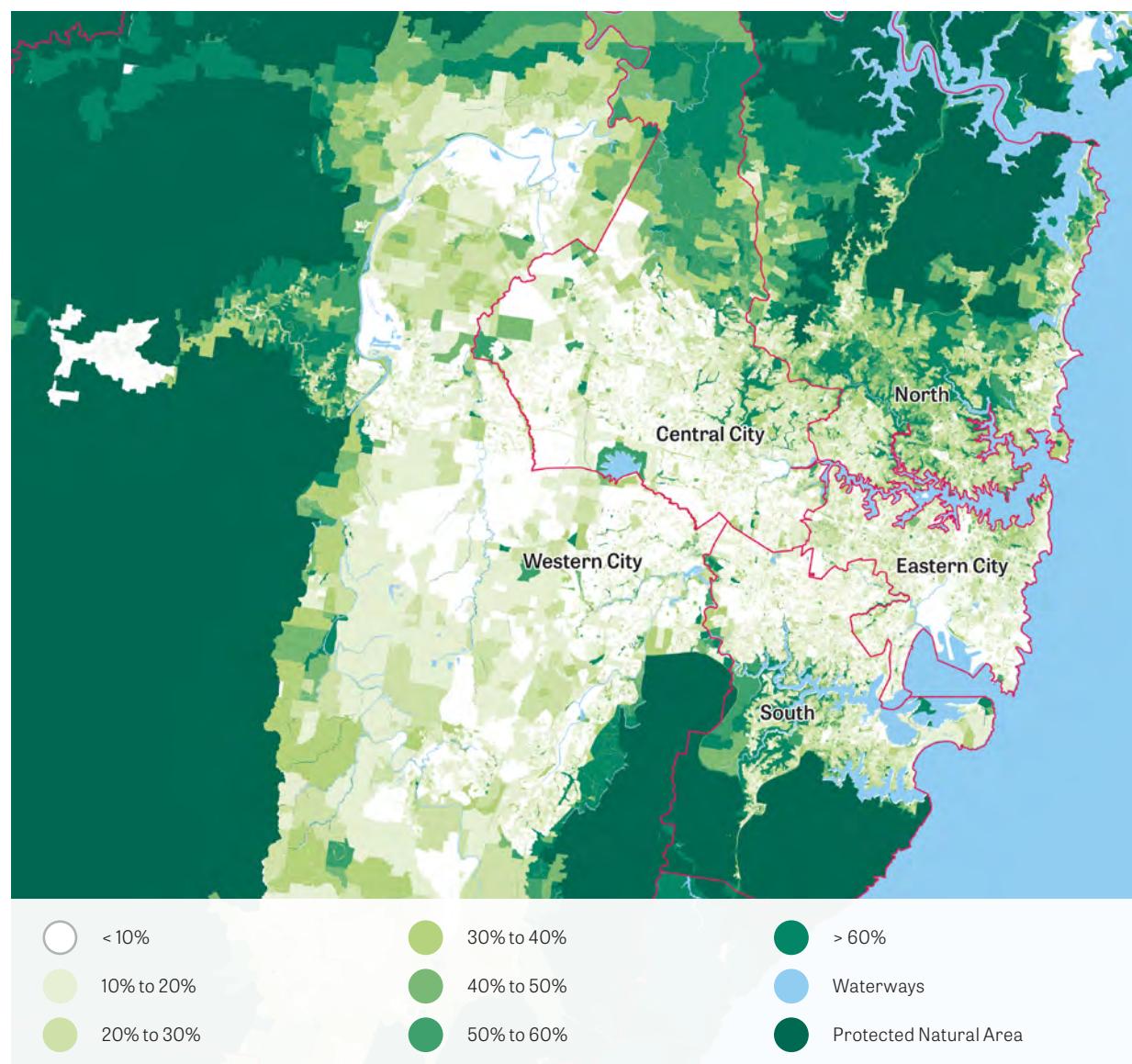
Increasing tree canopy in the urban area is one way to improve amenity and address urban heat. This will progress the evolution to a metropolis of three sustainable cities and enhance place-making.

Projections from NSW and ACT Regional Climate Model (NARClIM) show that air temperatures in Greater Sydney

are expected to increase in the future as a result of climate change and increasing urbanisation.<sup>39</sup>

Other ways we may improve and expand how we monitor urban heat include monitoring how water is incorporated in the landscape. Protecting and integrating waterways near neighbourhoods can both moderate urban heat island affects and support urban tree canopy. We can also identify ways to assist communities vulnerable to experiencing urban heat such as access to cooler places and community support networks.

**Figure 19:** Greater Sydney and district distribution of tree canopy cover (2016)<sup>40</sup>



## 2.2 Progress on the actions of the Greater Sydney Region Plan

The Commission has a statutory requirement under the *Environmental Planning and Assessment Act (1979)* (EP&A Act) to report on the implementation of the Greater Sydney Region Plan.

The Region Plan has 15 actions to be delivered by the Commission, State agencies, the Australian Government and councils. Each action has a lead agency and, in some cases, supporting State agencies and/or councils. This section provides an update on the delivery of the 15 actions since the Region Plan was released by the NSW Government in March 2018.

### **Region Plan: Infrastructure and collaboration actions**

#### **Action 1 Identify, prioritise and deliver Collaboration Areas:**

*Lead Agency: Commission*

The Commission to continue to identify, prioritise and lead Collaboration Areas across Greater Sydney. The Commission will annually review the Collaboration Area program and priorities.

- Collaboration Areas are a place-based concept that the Commission has developed to address complex issues that require cross-stakeholder solutions.
- The Commission prioritised five Collaboration Areas for 2017–18:
  - Camperdown–Ultimo
  - Randwick
  - Liverpool
  - Greater Penrith
  - Rhodes East

- In each of these areas the Commission has brought together up to 30 stakeholders, including State agencies, utilities, councils, arts organisations, universities, TAFE, local area health services, businesses and chambers of commerce to form a working group. The relevant District Commissioner chaired each group.
- In 2018 the Commission delivered three Place Strategies which are available on the Commission's website: Camperdown–Ultimo, Randwick and Liverpool.
- The Place Strategy for Greater Penrith is pending the inputs on the mitigation of flood risks in the Hawkesbury–Nepean Valley.
- The Rhodes East project focuses on sustainable utilities and is on hold pending Planned Precinct work by the Department of Planning, Industry and Environment (DPIE).
- The Commission is supporting Collaboration Area stakeholders to implement the Place Strategies already delivered, with the Commission, councils and other key stakeholders providing dedicated resources over the next 12–24 months.
- Collaboration Areas prioritised for 2019 are:
  - Australian Nuclear Science and Technology Organisation (ANSTO) research and innovation precinct
  - Bankstown health and education precinct and Bankstown Airport/Milperra industrial and urban services precinct
  - Campbelltown–Macarthur health and education precinct
  - Kogarah health and education precinct.
- Each of these projects is underway with up to 50 local stakeholders coming together for a series of workshops on such things as movement and place, liveability and transport.
- An annual review of the Collaboration Area program and priorities will be undertaken in late 2019.
- Further information is provided at **Actions 8 and 10**.

## Action 2 Co-ordinate land use and infrastructure for the Western City District

*Lead Agency: Commission*

The implementation and governance commitments of the Western Sydney City Deal identify that the Commission will coordinate land use and infrastructure for the Western City District.

- Since the announcement of the Western Sydney City Deal in March 2018, the Commission has implemented a cross-Government Coordination Committee (agency leads) to bring all relevant agencies together to focus on the co-ordination of land use and infrastructure.
- Geoff Roberts, Deputy Chief and Economic Commissioner has been appointed Chief Co-ordinator, Western Parkland City, with responsibility to coordinate the land use and infrastructure planning. Mr Roberts chairs the cross-Government Committee.
- Tri-government arrangements are in place including a Leadership Group (Ministers and Mayors) and an Implementation Board (Agency Secretaries and General Managers).
- The Western City and Aerotropolis Authority has been established and the Board appointed. Mr Roberts has also been appointed to the Board to ensure whole-of-government alignment across all aspects of City Deal implementation.
- Western Sydney growth infrastructure compacts (GICs), are also underway to better integrate and optimise land use and infrastructure planning. See also **Action 9**.
- The Western Sydney Planning Partnership is an integrated project team with local government that will progress the planning for the Western Sydney Growth Area. The partnership will address district-wide considerations such as common planning assumptions, uniform local government engineering standards and precinct planning, including the Stage 2 Land Use and Infrastructure Implementation Plan (LUIIP).

The image displays three vertical panels, each representing a Place Strategy document from the Greater Sydney Commission:

- Liverpool Place Strategy:** The top panel features a green and blue circular graphic overlaid on an aerial photograph of a river and surrounding urban areas. The text "Greater Sydney Commission" and "COLLABORATION AREA" are at the top, followed by the title "Liverpool Place Strategy".
- Randwick Place Strategy:** The middle panel features a green and blue circular graphic overlaid on an aerial photograph of a city skyline and parklands. The text "Greater Sydney Commission" and "COLLABORATION AREA" are at the top, followed by the title "Randwick Place Strategy".
- Camperdown-Ultimo Place Strategy:** The bottom panel features a green and blue circular graphic overlaid on an aerial photograph of a dense urban area. The text "Greater Sydney Commission" and "COLLABORATION AREA" are at the top, followed by the title "Camperdown-Ultimo Place Strategy".

Each panel includes the "CA Collaboration - Place Strategy" logo at the bottom left and the date "February 2019" at the bottom right.

## **Region Plan: Liveability actions**

### **Action 3 Prepare housing strategies**

*Lead Agencies: Councils, DPIE, Commission*

Councils to prepare local or district housing strategies that respond to the principles for housing strategies and housing targets published in the District Plans. Housing strategies will outline how housing growth is to be managed, identify the right locations for additional housing supply in each local government area (LGA) and inform updates of local environmental plans.

- Greater Sydney councils have all made progress towards their local housing strategies as part of the Local Strategic Planning Statement (LSPS) program, with many councils set to exhibit their draft local housing strategy alongside or following the exhibition of their draft LSPS in 2019/20.
- The preparation of local housing strategies is being supported by DPIE consistent with the *Guide to Preparing Local Housing Strategies* released in October 2018 and the Commission's co-ordination with relevant State agencies.
- This has included the Commission's two-day Agency and Assurance Expo in February 2019 and 'health checks' with each of the 33 councils in March–April 2019.

### **Action 4 Develop 6–10 year housing targets**

*Lead Agencies: Commission, councils*

To inform the development of updated local environmental plans (LEPs) and housing strategies the Commission to work with councils and agencies to develop 6–10 year housing targets.

- Councils are preparing their local housing strategies to inform the 6–10 year housing targets with some commencing community consultation.
- The Commission is working with councils and DPIE through the LSPS assurance process to understand the housing needs of each LGA and the opportunities for new housing supply in the right locations.
- For the Western City District, the City Deal requires a 20-year housing target for each LGA. The current work of the Planning Partnership with Western Sydney councils will inform those targets.

- The Commission and DPIE will review local housing strategies and council capacity analysis in 2019/20 together with councils to develop and confirm the targets.

### **Action 5 Implement Affordable Rental Housing (ARH) Targets**

*Lead Agencies: Commission, DPIE, councils*

The Commission to work closely with DPIE to streamline implementation of new programs, particularly State Environmental Planning Policy (SEPP) (ARH) and SEPP No 70 – Affordable Housing (Revised Schemes). The Commission, in partnership with relevant State agencies, to develop detailed arrangements for delivering and managing the housing that is created by the targets.

- The Region Plan establishes ARH Targets as a mechanism to deliver an additional supply of affordable housing for very low to low income households in Greater Sydney. A 5–10% target is to be applied in defined precincts at the point of rezoning, as the uplift is subject to a viability test.
- All councils in Greater Sydney have now been included in SEPP 70 as a first step in implementing the ARH targets.
- An inter-agency working group is developing a whole-of-government approach to securing, delivering and managing ARH. The approach includes recommendations on a person's eligibility and the allocation of housing, the applicability (including specification) of the targets, the nature of developer contributions and their delivery, property ownership and management models. It is anticipated that the NSW Government will consider the findings of the working group in the second half of 2019.
- Councils' local housing strategies will include a local needs assessment for improved housing diversity and affordability outcomes. The specific types and number of households in housing stress will be quantified together with future housing supply projects where viable affordable housing outcomes could be achieved.
- Councils will then prepare an Affordable Housing Contributions Scheme required to implement affordable housing controls in their LEPs.

## Region Plan: Productivity actions

### Action 6 Collaborate to deliver the Greater Parramatta and the Olympic Peninsula (GPOP) vision

*Lead agencies: Commission, NSW Government, councils*

The Commission to continue leading the collaboration of councils, State agencies, businesses and the community to deliver the GPOP vision. GPOP is being championed as a place for new businesses, homes and services; for diverse employment; for walking and cycling; and to facilitate spaces for arts and culture.

- The Commission continues to lead the collaborating councils and stakeholders to deliver the GPOP vision by coordinating and chairing the inter-agency GPOP Coordination Group.
- Parramatta and Cumberland councils have each received \$2.5 million to prepare their LSPS which will help deliver the GPOP vision and relevant precinct plans.
- The GPOP vision is being delivered through two key initiatives being:
  - the Commission's GIC pilot which aims to support Government decision-making and the sequencing of integrated land use and infrastructure planning (see also Action 7)
  - the application of performance indicators for this precinct is being developed to better understand and track progress in delivery of the vision.

### Action 7 Develop a growth infrastructure compact for GPOP

*Lead Agency: Commission*

The Commission to coordinate, seek expertise and insight from councils, State agencies, businesses and the community to develop a GIC for GPOP by December 2018.

- The Commission has developed a new collaborative approach to land use and infrastructure planning called a GIC, that aims to:
  - model the growth potential of an area and explore scenarios for its long-term future
  - improve transparency on the need, funding and feasibility of infrastructure and services

- stage growth to deliver great places as well as more certainty for investors, developers and the local community.

- The Commission completed its pilot program in GPOP in December 2018 and is preparing the results for Government consideration in the second half of 2019.
- This is a significant step towards the consideration of infrastructure from a place-based approach and is set to also deliver on Recommendation 1 of the State Infrastructure Strategy 2018–2038.

### Action 8 Support the growth of the Camperdown–Ultimo Collaboration Area

*Lead Agency: Commission*

The Commission to lead private, government and education sector stakeholders in the ongoing planning of the Camperdown–Ultimo Collaboration Area through the preparation of a Place Strategy.

- The Camperdown–Ultimo Collaboration Area Place Strategy represents the contributions of a diverse range of stakeholders from the tertiary education sector, government agencies, councils and industry. It is available on the Commission's website.
- The Collaboration Area Place Strategy provided a foundation and key input to for the Sydney Innovation and Technology Precinct Taskforce announced by the Premier in August 2018.
- New governance arrangements are being established to continue the work of the collaboration area and to implement the place strategy.
- See also Action 1.

### Action 9 Collaborate to deliver the Western Sydney City Deal

*Lead Agency: Australian Government, NSW Government, councils*

The NSW Government, the Australian Government and eight councils to continue collaborating to deliver the Western Sydney City Deal.

- The Western Sydney City Deal Delivery Office is part of the Commission and provides project implementation and assurance, secretariat support for governance arrangements as well as monitoring and reporting.

- All 38 commitments of the City Deal have been scoped and are outlined in the City Deal Implementation Plan published in December 2018 and available on the Western Sydney City Deal website ([www.wscd.sydney](http://www.wscd.sydney)). Eight commitments have been completed, 27 are progressing and three scheduled to commence.
- The Western Parkland City Liveability Program Round 1 has commenced with all councils receiving the first round of funding. The Liveability Program supports local projects to deliver and enhance public space, community facilities and urban amenity with total funding of \$150 million. Round 2 will open to council applications later in 2019. More information on the projects is available on the City Deal website.
- Collaboration is also an important factor in the eight councils' LSPS, to provide a coordinated context for local planning. The LSPSs are due to be exhibited by October 2019 and are subject to assurance by the Commission.
- The Western Sydney Investment Attraction Office has been established in Liverpool and the Investment Attraction Fund implemented. Investment attraction is also being driven through Memoranda of Understanding. To date, 12 have been signed with national and international organisations.
- See also **Action 2**.

**Action 10 Facilitate whole-of-government place-based outcomes through Collaboration Areas for targeted centres, including Liverpool, Greater Penrith and Randwick**

*Lead Agency: Commission*

- Place Strategies for these target centres, encompassing a whole-of-government approach, have been completed or are progressing as follows:
  - Liverpool's Place Strategy identifies the place-based outcomes that would support the transformation of the City Centre and surrounds with new jobs, infrastructure, sustainable places and a mix of dwellings for the area;
  - Randwick's Place Strategy identifies priorities for place-based outcomes to improve the integration of health, research, education and teaching to drive innovation and economic growth around the strategic centre and health and education precincts; and

- The Place Strategy for Penrith is underway and focussed on sustainable, diverse and growing residential, employment and tourism opportunities.
- The strategies are available at [www.greater.sydney](http://www.greater.sydney). See also **Action 1** and **8**.

**Action 11 Review and plan for industrial and urban services land**

*Lead Agency: Commission*

The Commission to review all industrial and urban services land identified as review and manage in close collaboration with State agencies, councils and with industry input. The Commission will work with DPIE to review the industrial and urban services land in the South West and Western Sydney Airport Growth Areas.

- The Region Plan identifies the strategic role and essential value that industrial and urban services land plays in Greater Sydney, and the need to adopt several different approaches to address different requirements for these areas and their associated businesses across Greater Sydney.
- In October 2018 the Commission released a Thought Leadership Paper entitled *A Metropolis that Works*, available on the Commission's website. It highlights the need for these areas as well as the need for flexibility in responding to the changing nature of industrial and urban services, their spatial requirements and strategic value.
- The Commission has undertaken studies and set up a Steering Committee with Blacktown, Cumberland, Parramatta, The Hills, Hornsby, Liverpool and Fairfield councils and relevant State agencies to better understand the industrial precincts and the strategic needs in these LGAs.
- In January 2019 the Commission provided councils with an industrial lands database to assist with employment strategies.
- All councils are now considering their local employment and industrial lands in the updates to their local plans through their local strategic planning statements, as part of implementing the Region and District Plans.
- Industrial and urban services land is an important part of the planning taking place in both the South West and Western Sydney Airport Growth Areas. The Commission is working with DPIE to ensure appropriate land use planning and inform coordination. See also **Action 2**.

## Region Plan: Sustainability action

### Action 12 Develop and implement the South Creek Corridor Project

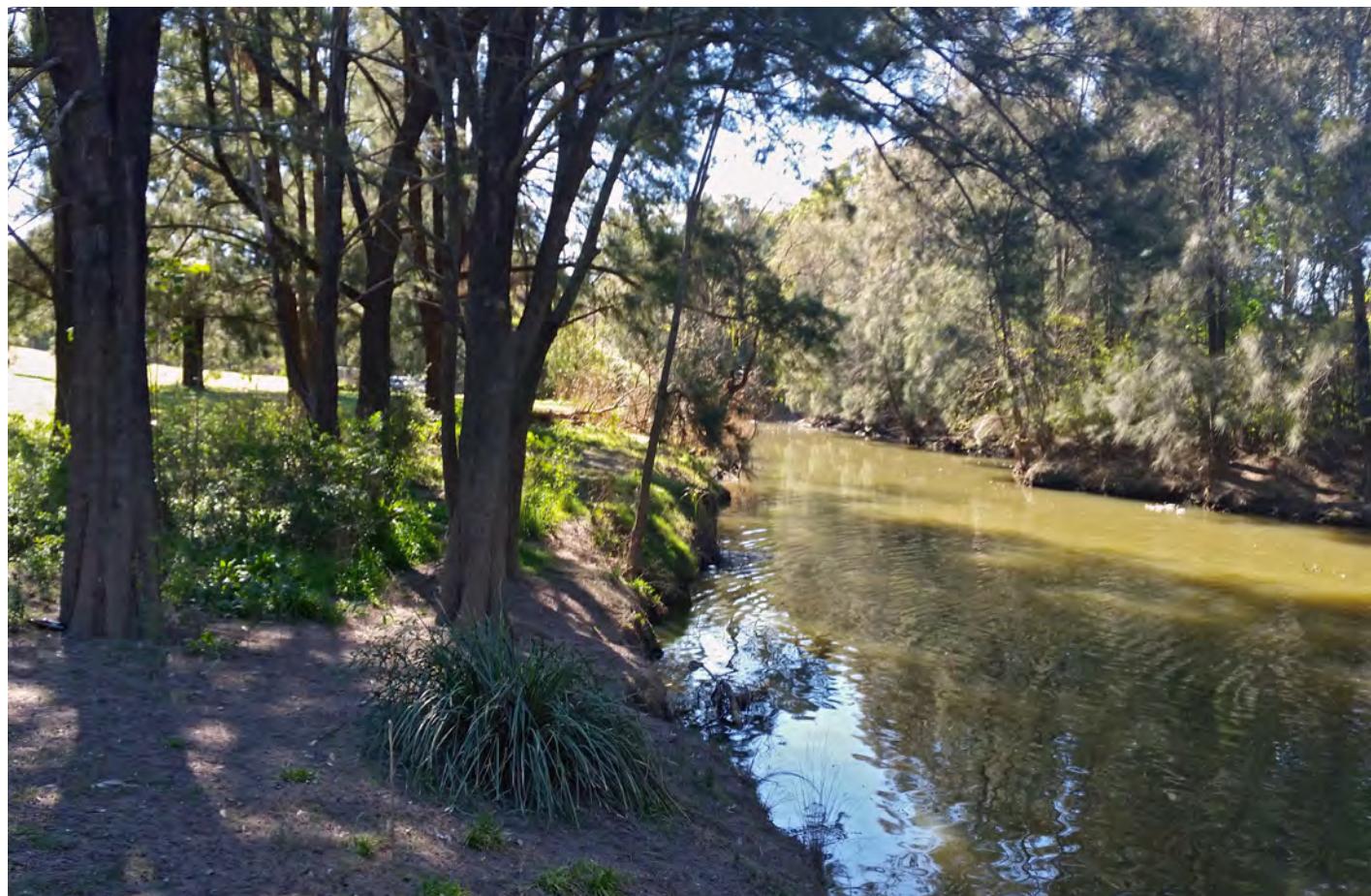
*Lead Agency: INSW, working with the Commission*

The outcome will be the creation of a cool and green Western Parkland City along South Creek and its tributaries. Water in the landscape will be managed to improve waterway health and the liveability of communities.

- INSW has finalised Stage 1 of the South Creek strategy, to inform land use planning, urban typologies and water cycle management for the Western Parkland City in consultation with State agencies and councils. The Commission led the landscape and urban design workstream with DPIE.

- INSW is leading a series of further work programs throughout 2019/20 to provide a sound basis for strategic policy and planning in relation to the Western Parkland City. These include:

- A Blue/Green Infrastructure Framework encapsulating all natural and physical elements of the Western Parkland City to ensure the inclusion of detailed protection measures in future precinct governance and planning
- Scoping of a preferred option for a regional approach to waterway governance
- A biosolids and organics strategy that maximises resource recovery and minimises environmental impact
- A waterway health and regulatory framework for the management of riparian vegetation, and for the integrated management of flow, point and diffuse source pollution sources to protect environmental values.



South Creek

### Region Plan: Implementation actions

**Action 13 Develop the Greater Sydney Commission's role in peer reviewing key land use and infrastructure plans prepared by NSW Department of Planning and Environment to provide assurance to the community that robust planning is being undertaken across Greater Sydney consistent with the Region and District Plans**

*Lead Agency: Commission*

- Key elements of the assurance responsibilities established through amendments to the EP&A Act and the *Greater Sydney Commission Act 2015* (GSC Act) include a requirement for Greater Sydney councils to obtain the written advice of the Commission that it supports a LSPS before it is made by the council.
- The current assurance program for LSPSs is underway with LEP reviews completed for each of the 33 councils in January 2019. The Commission has also been working with councils and bringing State agencies together with councils to support them in developing their LSPSs. LSPSs are required to be on public exhibition by 1 October 2019 and with the Commission for assurance by 31 March 2020.
- The Commission has undertaken an Assurance Review of planning in the Ryde local government area. The NSW Government is now considering the review panel's report.
- The Commission also has a role in peer reviewing key land use and infrastructure plans which currently includes an assurance review of the Western Sydney Planning Partnership's Western Sydney Aerotropolis LUIP and initial Precinct Plans in 2019 to ensure consistency with the Region and District Plan. See also Action 2.

**Action 14 Develop performance indicators in consultation with State agencies and councils that measure the 10 Directions to inform inter-agency, State and local government decision-making**

*Lead Agencies: Commission, TfNSW, NSW Health, Department of Education, councils*

- The Commission has worked with State agencies, councils, industry, stakeholders and the community to develop performance indicators that measure the 10 Directions.

- This work included cross-government collaboration with TfNSW, NSW Health, DPIE, NSW Treasury, Department of Education, NSW Health and Department of Premier and Cabinet.

- The Commission hosted two Citizens Engagement Panels in November 2018 as an opportunity for the community to help shape the way we measure implementation of the Plans. This was a new channel of community engagement that participants rated highly.
- The initial indicators are released as part of this publication, *The Pulse of Greater Sydney*, and are supported by detailed information on the Greater Sydney Dashboard on the Commission's website.
- Further work is underway with agencies to enhance the accuracy and applicability of reporting on indicators, with an immediate focus on improving indicators for the 30-minute city and walkable places.

**Action 15 Develop detailed monitoring and reporting of housing and employment in Greater Sydney**

*Lead Agencies: DPIE, councils*

- In 2019 DPIE supported councils by providing monitoring and reporting tools to assist with strategic planning:
  - the Community Profile tool and the Demography and Housing Dashboard include baseline social and housing data
  - the Housing Mapping Scenario Tool that assists councils to undertake housing capacity analysis and scenario testing.
- DPIE's Employment Lands Development Monitor is being updated throughout 2019 to improve the mapping and analysis of current land uses within employment land precincts.
- DPIE are also set to deliver enhancements to the accessibility reporting and monitoring of its data and tools, including improved monitoring of dwelling diversity, jobs mapping and greenfield development, in late 2019/early 2020.

# 3 Implementing the five district plans

District plans are being implemented by councils across Greater Sydney through a process that will lead to updates of their Local Environmental Plans. At present the focus is on local strategic planning that addresses district plans as well as council Community Strategic Plans (see Figure 20).

The implementation process has three key parts:

- Local strategic planning statements (LSPSs):** Councils are developing LSPSs to set the 20-year vision for their local government area, including identifying the special character and values to be preserved and how change will be managed. The LSPS explains how council is implementing the planning priorities and actions in the relevant district plan in conjunction with their Community Strategic Plan.
- Local housing strategies:** District plans require councils to prepare local housing strategies to address housing needs. This work informs 6–10 year housing targets for each local government area.
- Updates to local environmental plans (LEPs):** LEPs provide the rules that guide local development and contain controls such as land use zoning and height. Council's are currently updating their LEPs to reflect the district plan and deliver the vision set out in their LSPSs.

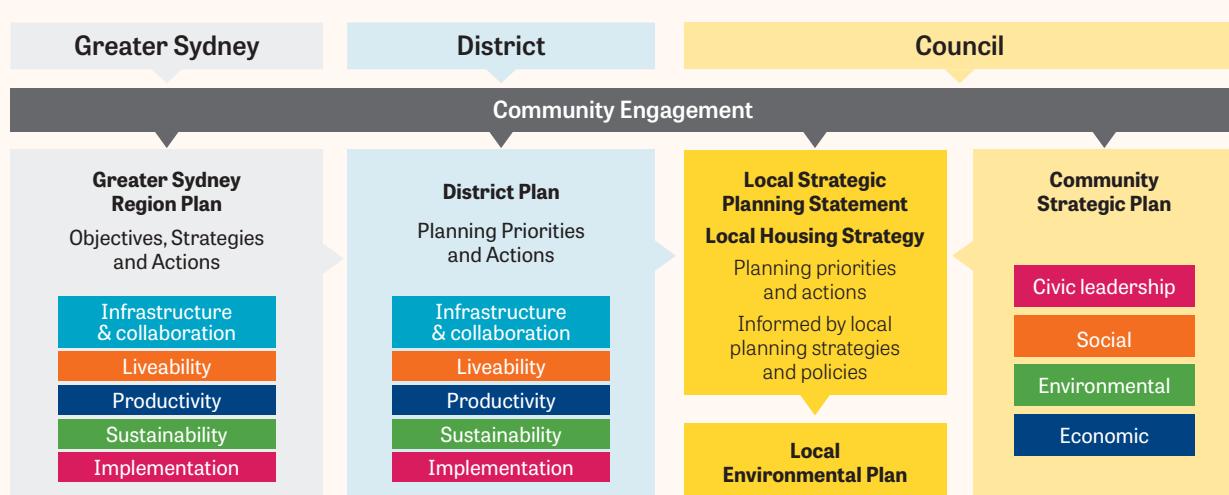
A new assurance process led by the Commission has meant State agencies are working closely with councils to progress implementation. Assurance milestones have included:

- LEP reviews:** commenced in October 2018 when councils reported to the Commission on reviews to their LEPs against local circumstances and district plan priorities and actions. These reviews established the groundwork for the draft LSPSs.
- Assurance and Agency Expo:** the Commission hosted councils and State agencies in February 2019 to collaborate with councils as they commenced draft LSPSs.
- LSPS health checks:** in March-April 2019, councils were hosted by their district commissioner to gauge progress of draft LSPSs.

To provide an overview of the current implementation in each district, the following implementation reports document the status of councils' implementation program and highlight district-specific programs and planning.

Each District Plan implementation report includes a snapshot of the performance indicators at a district level to highlight priorities that need to be addressed. Future reports will include details on the progress of specific district plan actions once LSPSs are finalised.

**Figure 20:** Relationship of region, district and local planning in Greater Sydney



# 3.1 Central City District Plan Implementation Report

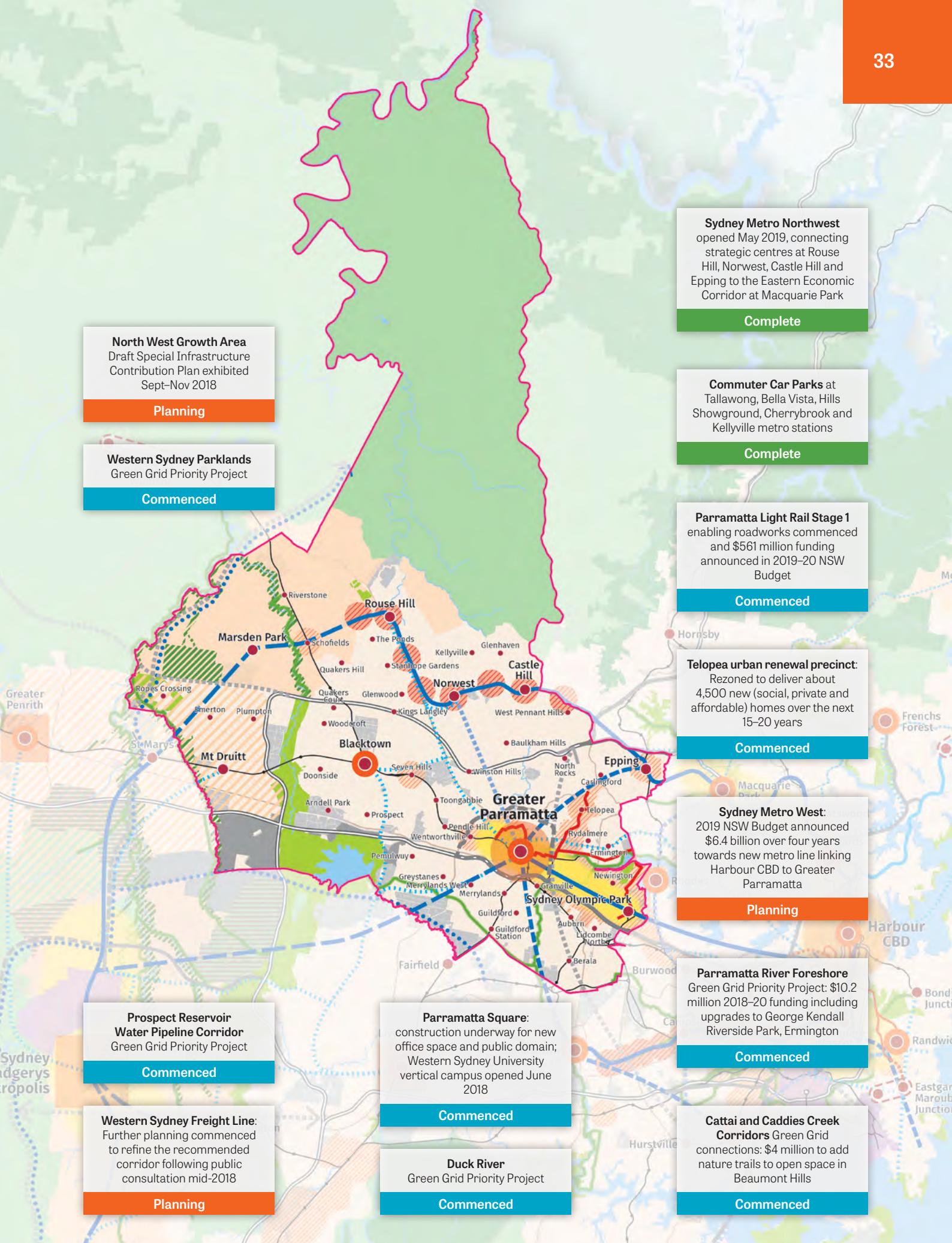
The four councils in the Central City District (Blacktown, Cumberland, Parramatta and The Hills) are on track to deliver LEP updates by mid- 2020. All four councils are receiving NSW Government funding to support an accelerated program to implement the District Plan.

**The following provides an overview of District-specific programs and planning using the four District Plan themes and the District Structure Plan Map:**

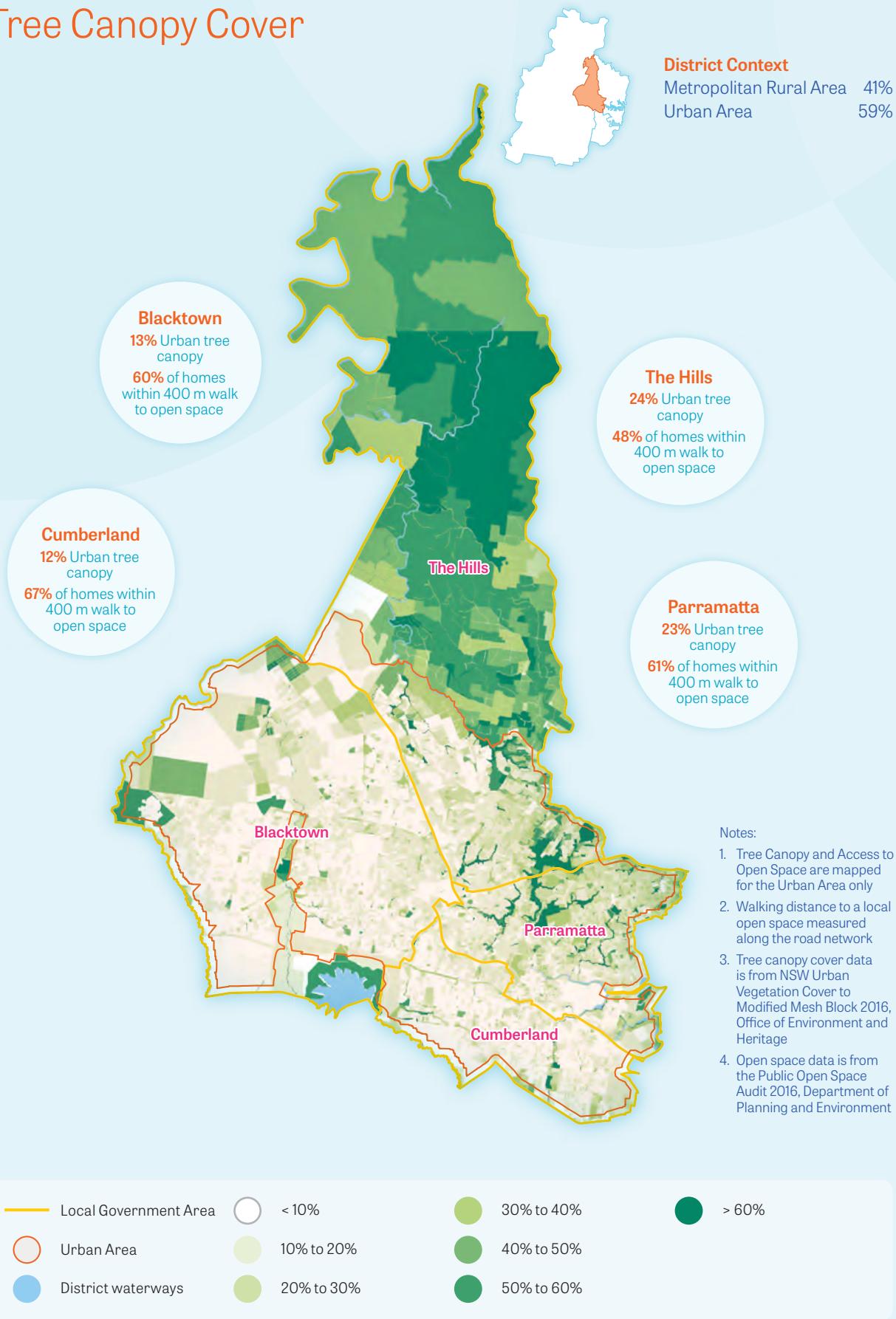
 <b>Infrastructure and collaboration</b>	<ul style="list-style-type: none"> <li><b>Growth Infrastructure Compact (GIC) Pilot</b> for Greater Parramatta and Olympic Peninsula (GPOP) underway. Results anticipated to become available in the second half of 2019.</li> <li><b>Health:</b> Over \$480 million NSW Government funding granted in 2018–20 for Stage 1 redevelopment of Westmead Hospital. Blacktown and Mount Druitt Hospitals redevelopment is underway; with Blacktown Hospital transitioning to a major metropolitan hospital.</li> <li><b>Schools Infrastructure:</b> Work recently completed or in progress for four new public schools and two new high schools, upgrades to 19 public schools and six high schools. Eight existing primary schools and three high schools are sharing open space with the public under the <i>Share Our Space Program</i>.</li> </ul>
 <b>Liveability</b>	<ul style="list-style-type: none"> <li><b>A place-based approach</b> is being developed by councils in the preparation of Local Strategic Planning Statements which are due to commence exhibition by 1 October 2019.</li> <li><b>Local Housing Strategies:</b> being developed by councils will identify their response to housing need and help inform 6–10 year housing targets.</li> <li><b>Housing targets:</b> As a combined total, the Central City District is on track to meet the 0–5 year housing target for mid-2016–mid-2021 of 53,500 new dwellings.</li> <li><b>District Arts, Culture and Sport:</b> Investments include Bankwest Stadium opened May 2019, Powerhouse Precinct in planning, and \$50.5 million funding for additional tennis facilities at Sydney Olympic Park.</li> </ul>
 <b>Productivity</b>	<ul style="list-style-type: none"> <li><b>Greater Parramatta Metropolitan Centre:</b> Central Parramatta planning proposal to proceed to public exhibition.</li> <li>Strategic Centres: <ul style="list-style-type: none"> <li><b>Sydney Olympic Park:</b> updated Sydney Olympic Park Master Plan 2030 approved in August 2018, including capacity for 34,000 jobs, retail space, new homes, education sites, local parks and an entertainment hub. There is also a \$50 million upgrade to Homebush Bay Drive.</li> <li><b>Blacktown:</b> In March 2019, Australian Catholic University partnered with Blacktown City Council to build a university campus in the centre.</li> </ul> </li> </ul>
 <b>Sustainability</b>	<ul style="list-style-type: none"> <li><b>Greater Sydney Open Space 2018–19 Program:</b> Funding of \$14 million for Parramatta and The Hills to secure and improve green space.</li> <li><b>Five Million Trees Program:</b> Funding of \$1.15 million for Blacktown and Cumberland to expand urban tree canopy.</li> <li><b>Parramatta River draft Masterplan</b> launched in October 2018 for public consultation.</li> <li><b>South Creek Strategy Stage 1</b> – finalised by INSW in consultation with State agencies and councils.</li> </ul>

**Key focus areas emerging for local strategic planning in the District as advised by councils include:**

- Leveraging** new investments in transport infrastructure to support jobs growth
- Challenges** of funding and delivering adequate community and social infrastructure as well as new and embellished open space, to meet growing and changing needs
- Understanding and addressing** the demand for more diverse housing types including student accommodation, boarding houses and secondary dwellings
- Addressing** pressures to convert industrial lands to residential uses
- The role of urban form** in allowing for increased urban tree canopy cover and mitigating urban heat island effects.

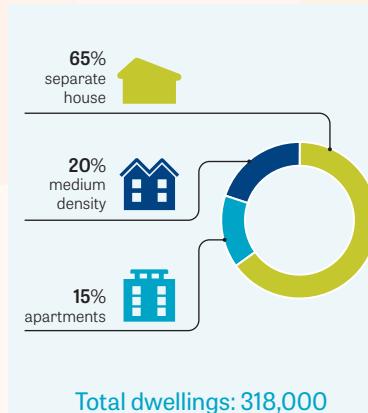
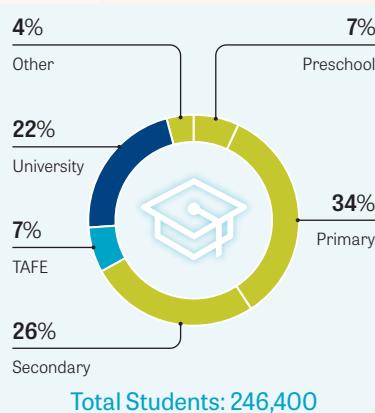
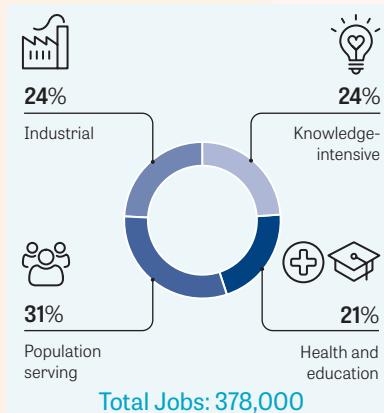


## Tree Canopy Cover



# Evolving to a Metropolis of Three Cities

## PI 1 Jobs, education and housing



### Job types (2016)

The Central City District is home to 18% of the Region's jobs and 21% of the Region's population. In 2016, 52% of the District's working residents worked within the District. Between 2006–2016 the Central City District attracted 19% of the Region's jobs growth and 27% of the Region's population increase. This means the District population increase has been faster than jobs growth.

In 2016, 38% of the District's jobs were located in metropolitan or strategic centres and 35% were in industrial precincts. Growing centres and supporting new industries will help strengthen jobs growth in the District.

### Education type (2016)

Of the total population of 971,100, 25% (246,400 people) were students in 2016. In 2016, primary school students were the greatest share of all students in the District at 34%. This means there is a strong pipeline emerging for secondary and tertiary education.

29% of students that lived in the District were studying at a university or TAFE. There has been an increase in university students of 87% between 2006–2016 to 53,500 students.

### Housing type (2016)

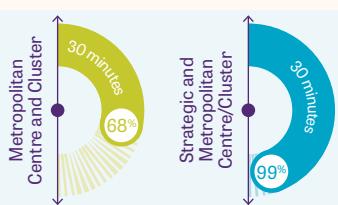
In 2016, there were 318,000 dwellings in the District. This includes 56,700 new dwellings in the period 2006–2016, which is a 22% increase in total dwellings.

The types of households that occupied these total dwellings included:

- 44% couples with children;
- 20% couples with no children; and
- 16% lone person households.

The largest total increase in household type between 2006–2016 was couples with children, which increased by 28,000 households (27%).

## PI 2 30-minute city – network capability



### Access to metropolitan and strategic centres (2018)

The network capability tool measures 30-minute travel by public transport (based on current infrastructure and 2018 timetabled service provision in the 6am-10am morning peak). It shows:

- 68% of the District's dwellings are within 30-minutes by public transport to a metropolitan centre or cluster; and
- 99% of the District's dwellings are within 30-minutes by public transport to a metropolitan or strategic centre.

## PI 3 Walkable places

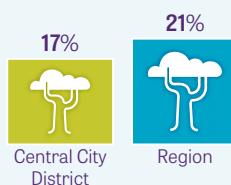


### All walking trips (2017-18)

In 2017 15% of all trips in the Central City District were walking trips, while 18% of all trips across the region were walking trips. Walking distance to open space becomes more important as densities increase, as does the need for public spaces. Measured using the street network, across the District:

- 59% of low-medium density dwellings are located within 400 metres walk to open space; and
- 24% of high-density dwellings are located within 200 metres walk to open space.

## PI 4 Addressing urban heat



### Tree canopy (2016)

Over the 2018–19 summer North Parramatta experienced 19 days over 35°C and Sydney Olympic Park experienced 13 days over 35°C. Green infrastructure including trees and other vegetation as well as water in the landscape are an important part of place-making and can also help mitigate urban heat.

Currently, the Central City District has a lower proportion of tree canopy cover in the urban area (17%) compared to the Greater Sydney Region as a whole (21%).

## 3.2 Eastern City District Plan Implementation Report

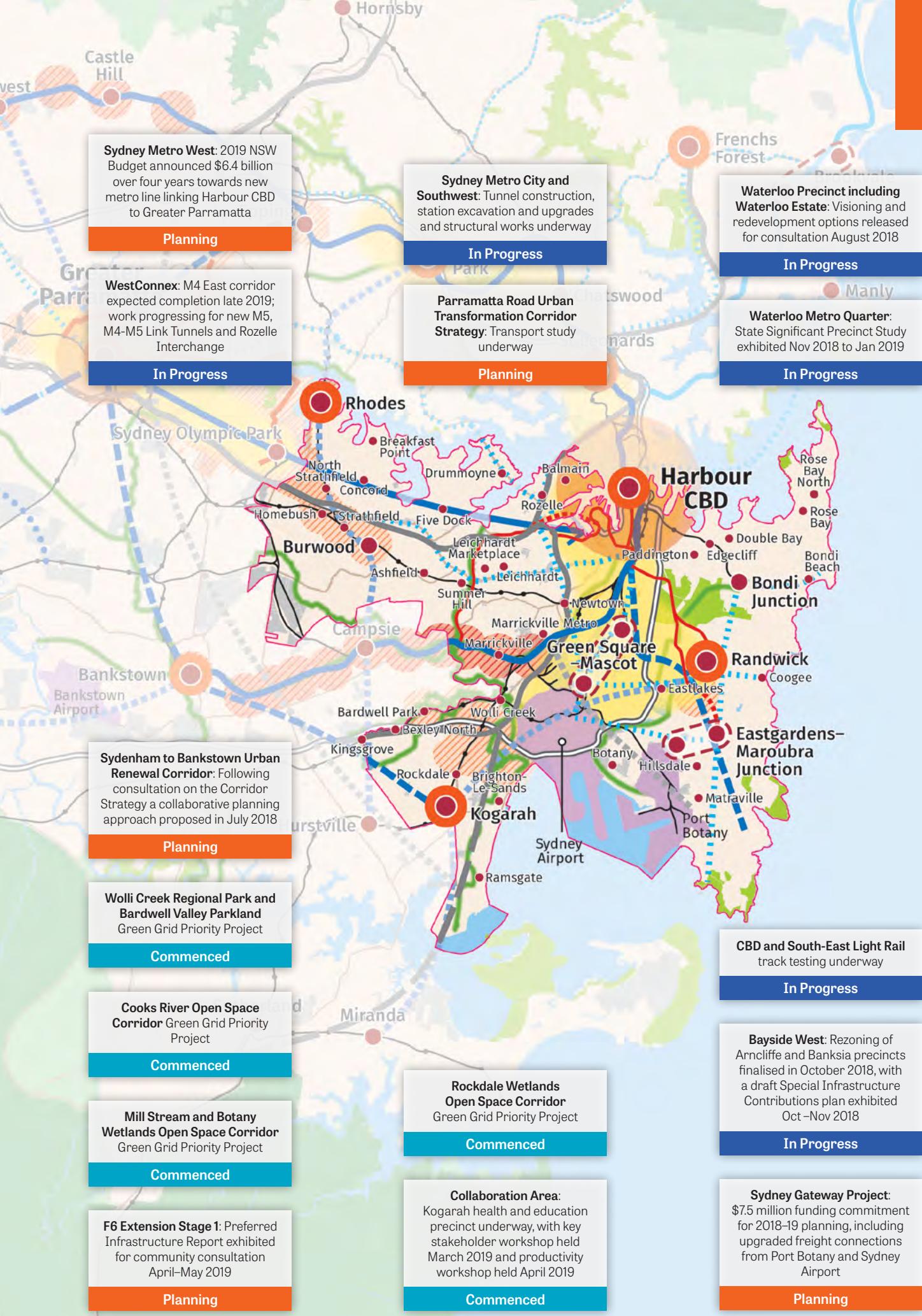
Of the nine councils in the Eastern City District, Bayside, Canada Bay and Inner West councils are currently set to deliver LEP updates by mid-2020, following NSW Government funding to support an accelerated program to implement the District Plan. The City of Sydney, Burwood, Randwick, Waverley, Strathfield and Woollahra council LEP updates are due by mid-2021.

**The following provides an overview of District-specific programs and planning using the four District Plan themes and the District Structure Plan Map:**

 <b>Infrastructure and collaboration</b>	<ul style="list-style-type: none"> <li><b>Collaboration Areas:</b> Stakeholders from the Randwick and Camperdown–Ultimo Collaboration Areas transitioning to implementation of the Place Strategies (completed in 2018).</li> <li><b>School Infrastructure:</b> Construction underway or complete for two new public schools and one new high school, as well as upgrades to seven public schools and four high schools in the district to meet growing needs. Four existing primary schools and three high schools are sharing open space with the public under the <i>Share Our Space Program</i>.</li> </ul>
 <b>Liveability</b>	<ul style="list-style-type: none"> <li><b>A place-based approach</b> is being developed by councils in the preparation of Local Strategic Planning Statements which are due to commence exhibition by 1 October 2019.</li> <li><b>Local Housing Strategies:</b> being developed by councils will identify their response to housing need and help inform 6–10 year housing targets.</li> <li><b>Housing targets:</b> As a combined, the Eastern City District is on track to meet the 0–5 year housing target for mid-2016–mid-2021 of 39,850 new dwellings.</li> <li><b>District Arts, Culture and Sport:</b> Investments include Sydney Opera House Stage 1 renewal, Stage 1 Australian Museum redevelopment, Sydney Football Stadium redevelopment, Darling Harbour public domain upgrades and planning for a creative industries precinct in Ultimo.</li> </ul>
 <b>Productivity</b>	<ul style="list-style-type: none"> <li><b>Harbour CBD:</b> Construction commenced for the new Barangaroo and Pitt Street metro stations, as well as upgrades to Central and Martin Place stations.</li> <li><b>Sydney Innovation and Technology Precinct Taskforce:</b> Camperdown–Ultimo Collaboration Area work provided a foundation for the taskforce announced by the Premier in August 2018.</li> <li><b>Bondi Junction Strategic Centre:</b> Waverley Council working towards goal for a low-carbon precinct.</li> </ul>
 <b>Sustainability</b>	<ul style="list-style-type: none"> <li><b>Five Million Trees Program:</b> funding of \$1.5 million for Bayside, Canada Bay, City of Sydney, Inner West, Strathfield, Waverley and Woollahra to expand urban tree canopy.</li> <li><b>Bondi to Manly Walk:</b> A partnership has been established between City of Sydney, Mosman, North Sydney, Northern Beaches, Waverley and Woollahra councils and State and Australian agencies to create the Bondi to Manly Walk – stretching 80km around the foreshore of Sydney Harbour.</li> <li><b>The GreenWay Master Plan</b> was adopted by Inner West Council on 14 August 2018.</li> </ul>

**Key focus areas emerging for local strategic planning in the District as advised by councils include:**

- Collaboration** on cross-LGA issues including the Eastern Economic Corridor
- Importance** of location and timing of key infrastructure projects for staging of growth
- Changing demographics** shaping demand for more diverse housing
- Growing and supporting** the night time economy and creative industries
- Optimising** existing use of open space and recreation facilities, including shared use and upgrades, to meet future demand
- Urban renewal** as opportunity to revitalise centres, improve public domain and deliver low-carbon outcomes
- Delivering** adequate new open space and social infrastructure, including community facilities.



## Tree Canopy Cover

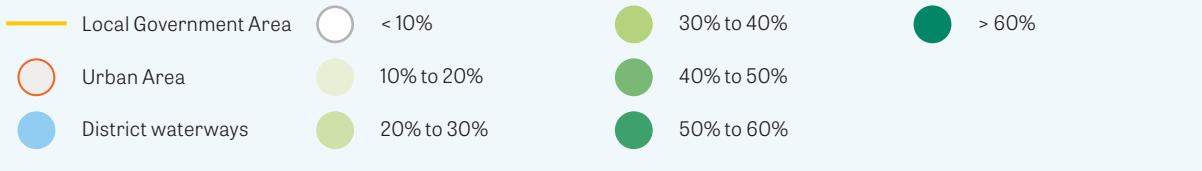


**District Context**  
Urban Area 100%



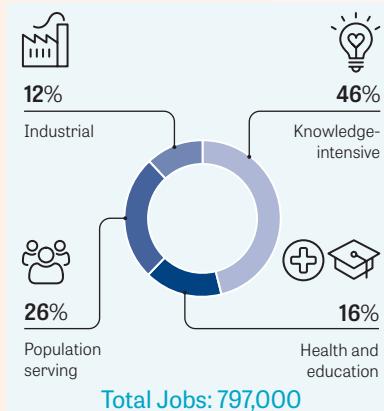
Notes:

1. Tree Canopy and Access to Open Space are mapped for the Urban Area only
2. Walking distance to a local open space measured along the road network
3. Tree canopy cover data is from NSW Urban Vegetation Cover to Modified Mesh Block 2016, Office of Environment and Heritage
4. Open space data is from the Public Open Space Audit 2016, Department of Planning and Environment



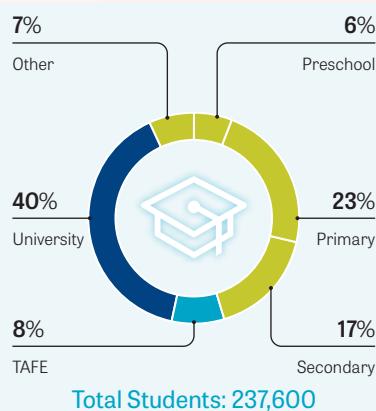
# Evolving to a Metropolis of Three Cities

## PI 1 Jobs, education and housing



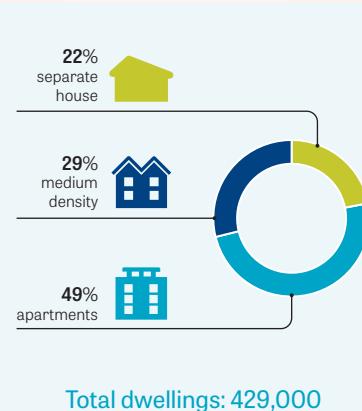
### Job types (2016)

The Eastern City District is home to **38%** of the Region's jobs and **22%** of the Region's population. In 2016, **78%** of the District's working residents worked within the District. Between 2006–2016 the Eastern City District attracted **44%** of the Region's jobs growth and **26%** of the Region's population increase. This means District job growth has been faster than population increase. In 2016, **70%** of the District's jobs were located in metropolitan or strategic centres and **10%** were in industrial precincts. Growing centres and supporting new industries will help strengthen jobs growth in the District.



### Education type (2016)

Of the total population of 1,030,600, 23% (237,600 people) were students in 2016. In 2016, university or other tertiary institution students were the highest share of all students in the District at **40%**. **48%** of students that lived in the District were studying at a university or TAFE. There has been a major increase in university students of **66%** between 2006–2016 to 94,200 students.



### Housing type (2016)

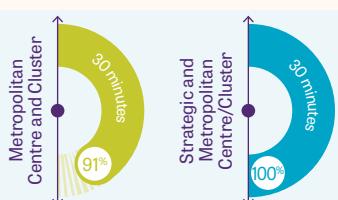
In 2016, there were **429,000 dwellings** in the District. This includes 56,700 new dwellings in the period 2006–2016, which is a **15%** increase in total dwellings.

The types of households that occupied these total dwellings included:

- **23%** couples with children;
- **24%** couples with no children; and
- **26%** lone person households.

The largest total increase in household type between 2006–2016 was couples with no children, which increased by 20,300 households (**27%**).

## PI 2 30-minute city – network capability

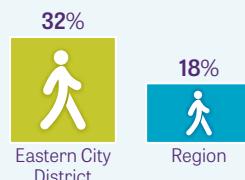


### Access to metropolitan and strategic centres (2018)

The network capability tool measures 30-minute travel by public transport (based on current infrastructure and 2018 timetabled service provision in the 6am–10am morning peak). It shows:

- **91%** of the District's dwellings are within 30-minutes by public transport to a metropolitan centre or cluster; and
- **100%** of the District's dwellings are within 30-minutes by public transport to a metropolitan or strategic centre.

## PI 3 Walkable places

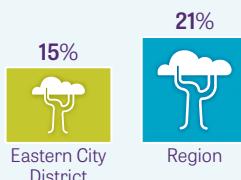


### All walking trips (2017-18)

In 2017, **32%** of all trips in the Eastern City District were walking trips, while **18%** of all trips across the region were walking trips. Walking distance to open space becomes more important as densities increase, as does the need for public spaces. Measured using the street network, across the District:

- **73%** of low-medium density dwellings are located within 400 metres walk to open space; and
- **44%** of high-density dwellings are located within 200m walk to open space.

## PI 4 Addressing urban heat



### Tree canopy (2016)

Over the 2018–19 summer the Harbour CBD (Observatory Hill) experienced **6 days** over 35°C and Sydney Airport experienced **9 days** over 35°C.

Green infrastructure including trees and other vegetation as well as water in the landscape are an important part of place-making and can also help mitigate urban heat.

Currently, the Eastern City District has a lower proportion of tree canopy cover in the urban area (**15%**) compared to the Greater Sydney Region as a whole (**21%**).

For details of data source please refer to Greater Sydney Dashboard

# 3.3 North District Plan Implementation Report

Of the nine councils in the North District, Hornsby, North Sydney and Ryde councils are currently set to deliver LEP updates by mid-2020, following NSW Government funding to support an accelerated program to implement the District Plan. Lane Cove, Hunters Hill, Ku-ring-gai, Mosman, Northern Beaches and Willoughby council LEP Updates are due by mid-2021.

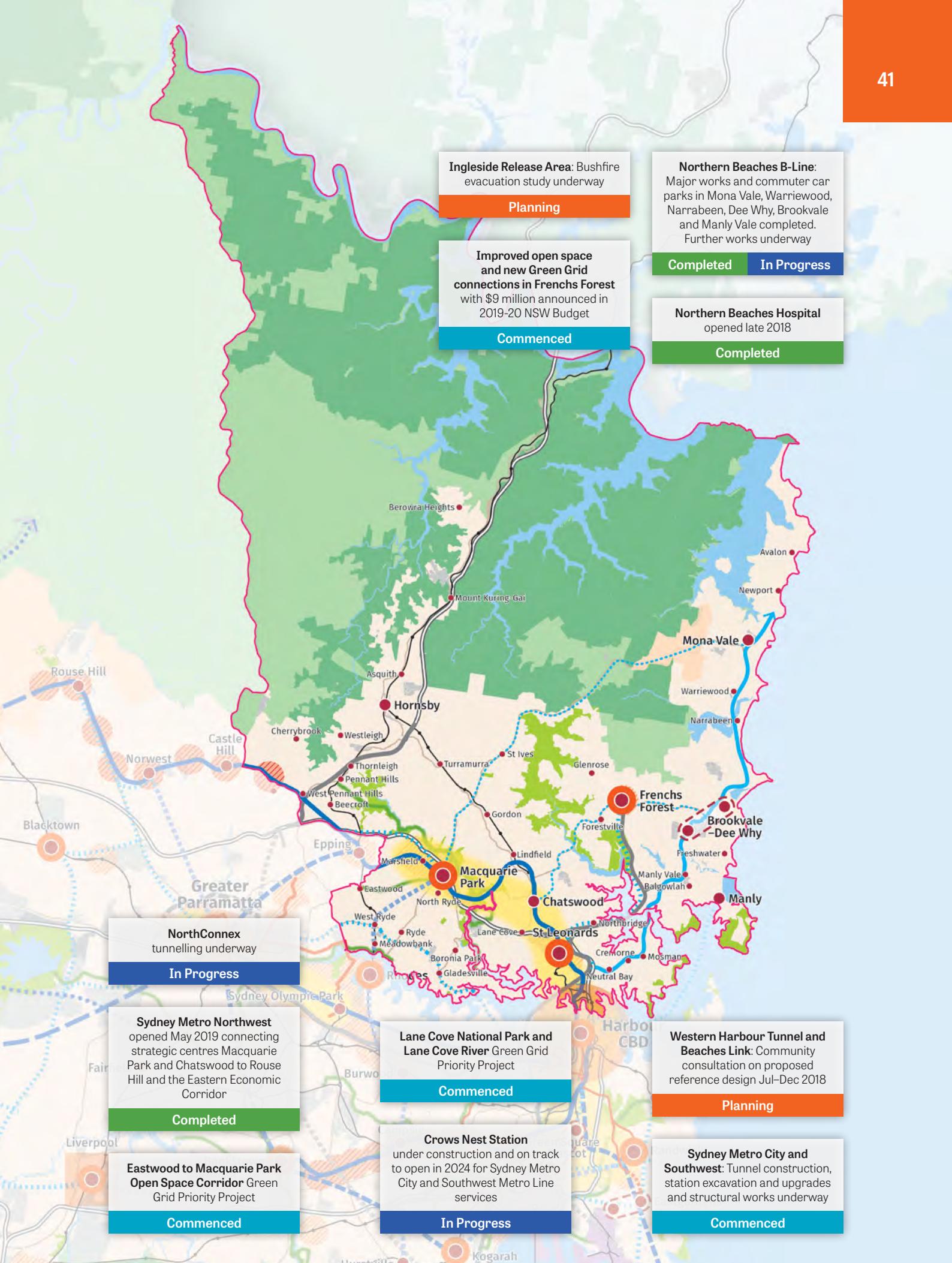
**The following provides an overview of District-specific programs and planning using the four District Plan themes and the District Structure Plan Map:**

 <b>Infrastructure and collaboration</b>	<ul style="list-style-type: none"> <li>• <b>Ryde Assurance Review</b> of planning in the Ryde Local Government Area, with a focus on the Macquarie Park Investigation Area completed by Greater Sydney Commission in May 2019; included recommendation for Ryde Coordination Group to improve alignment of infrastructure and growth.</li> <li>• <b>Health</b>: New Northern Beaches Hospital opened late 2018. Hornsby Hospital \$95 million upgrade underway.</li> <li>• <b>School Infrastructure</b>: Construction recently completed or underway for two new public schools, four new high schools and upgrades for 11 public schools and five high schools. 16 existing primary schools and three high schools are sharing open space with the public under the Share Our Space Program.</li> </ul>
 <b>Liveability</b>	<ul style="list-style-type: none"> <li>• <b>A place-based approach</b> is being developed by councils in the preparation of Local Strategic Planning Statements which are due to commence exhibition by 1 October 2019.</li> <li>• <b>Local Housing Strategies</b>: being developed by councils will identify their response to housing need and help inform 6–10 year housing targets.</li> <li>• <b>Housing targets</b>: As a combined total, the North District is on track to meet the 0–5 year housing target for mid 2016–mid-2021 of 25,950 new dwellings.</li> <li>• <b>District Arts, Culture and Sport</b>: Investments include new cycleways and walkways along the Coast Walk from Manly to Palm Beach and upgrades to Taronga Zoo visitor experience and wildlife retreat.</li> </ul>
 <b>Productivity</b>	<ul style="list-style-type: none"> <li>• <b>Strategic Centres</b>: <ul style="list-style-type: none"> <li>– <b>Frenchs Forest</b>: \$150m NSW Government funding for 2018-19 committed and upgrades underway to roads and new road bridges to support the new Northern Beaches Hospital and surrounds.</li> <li>– <b>Brookvale-Dee Why</b>: Northern Beaches Council have reviewed community feedback on the Brookvale Masterplan and will complete transport and employment studies for Brookvale Strategic Centre by late 2019.</li> <li>– <b>St Leonards</b>: Consultation on the draft Planning Package and draft Special Infrastructure Contribution Plan Oct 2018 – Feb 2019 for the St Leonards and Crows Nest precincts.</li> </ul> </li> </ul>
 <b>Sustainability</b>	<ul style="list-style-type: none"> <li>• <b>Greater Sydney Open Space Program</b>: Funding of \$9 million for Northern Beaches Council to secure and improve green space.</li> <li>• <b>Five Million Trees Program</b>: Funding of \$500,000 for Mosman, Ku-ring-gai, Hornsby and Ryde Councils to expand urban tree canopy.</li> </ul>

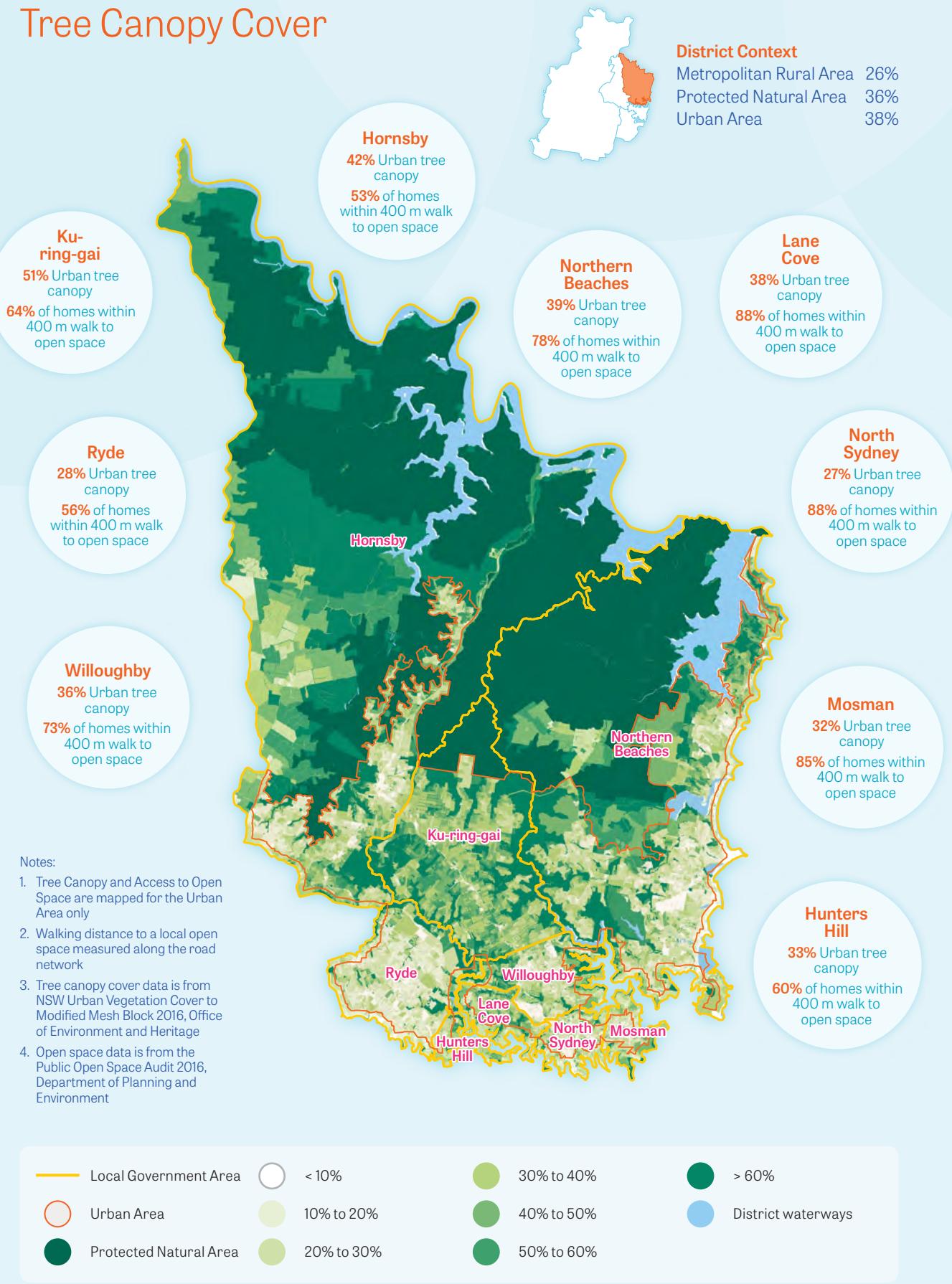
**Key focus areas emerging for local strategic planning in the District as advised by councils include:**

- **Enhancing** transport connectivity to and within the Eastern Economic Corridor
- **Coordination** of infrastructure and growth
- **Increasing** community facilities and housing diversity to address changing demographics

- **Optimising** existing use of open space and recreation facilities, including shared use, to meet future demand
- **The role of urban form** in allowing for increased urban tree canopy cover
- **Urban renewal** as an opportunity to revitalise centres, improve public domain and deliver low-carbon outcomes.



## Tree Canopy Cover



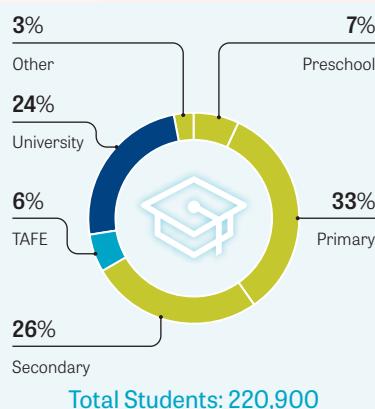
# Evolving to a Metropolis of Three Cities

## PI 1 Jobs, education and housing



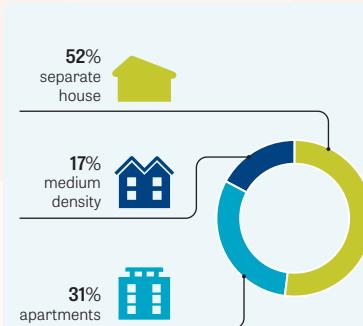
### Job types (2016)

The North District is home to 19% of the Region's jobs and 19% of the Region's population. In 2016, 60% of the District's working residents worked within the District. Between 2006–2016 the North District attracted 15% of the Region's jobs growth and 15% of the Region's population increase. This means the District population increase has been at the same rate as jobs growth. In 2016, 52% of the District's jobs were located in metropolitan or strategic centres and 9% were in industrial precincts. Growing centres and supporting new industries will help strengthen jobs growth in the District.



### Education type (2016)

Of the total population of 888,900, 25% (220,900 people) were students in 2016. In 2016, primary school students were the highest share of all students in the District at 33%. This means there is a strong pipeline emerging for secondary and tertiary education. 30% of students that lived in the District were studying at a university or TAFE. There has been an increase in university students of 26% between 2006–2016 to 53,100 students.



Total dwellings: 340,400

### Housing type (2016)

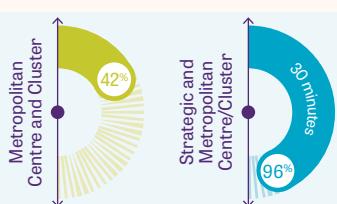
In 2016, there were 340,000 dwellings in the District. This includes 22,900 new dwellings in the period 2006–2016, which is a 7% increase.

The types of households that occupied these total dwellings included:

- 37% couples with children;
- 25% couples with no children; and
- 21% lone person households.

The largest total increase in household type between 2006–2016 was couples with children, which increased by 18,700 households (19%).

## PI 2 30-minute city – network capability

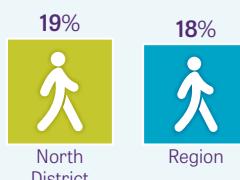


### Access to metropolitan and strategic centres (2018)

The network capability tool measures 30-minute travel by public transport (based on current infrastructure and 2018 timetabled service provision in the 6am-10am morning peak). It shows:

- 42% of the District's dwellings are within 30-minutes by public transport to a metropolitan centre or cluster; and
- 96% of the District's dwellings are within 30-minutes by public transport to a metropolitan or strategic centre.

## PI 3 Walkable places

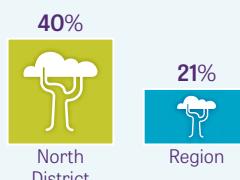


### All walking trips (2017-18)

In 2017, 19% of all trips in the North District were walking trips, while 18% of all trips across the region were walking trips. Walking distance to open space becomes more important as densities increase, as does the need for public spaces. Measured using the street network, across the District:

- 61% of low-medium density dwellings are located within 400 metres walk to open space; and
- 37% of high-density dwellings are located within 200 metres walk to open space.

## PI 4 Addressing urban heat



### Tree canopy (2016)

Over the 2018–19 summer Terrey Hills experienced 6 days over 35°C. Green infrastructure including trees and other vegetation as well as water in the landscape are an important part of place-making and can also help mitigate urban heat.

Currently, the North District has a much higher proportion of tree canopy cover in the urban area (40%) compared to the Greater Sydney Region as a whole (21%).

For details of data source please refer to Greater Sydney Dashboard

# 3.4 South District Plan Implementation Report

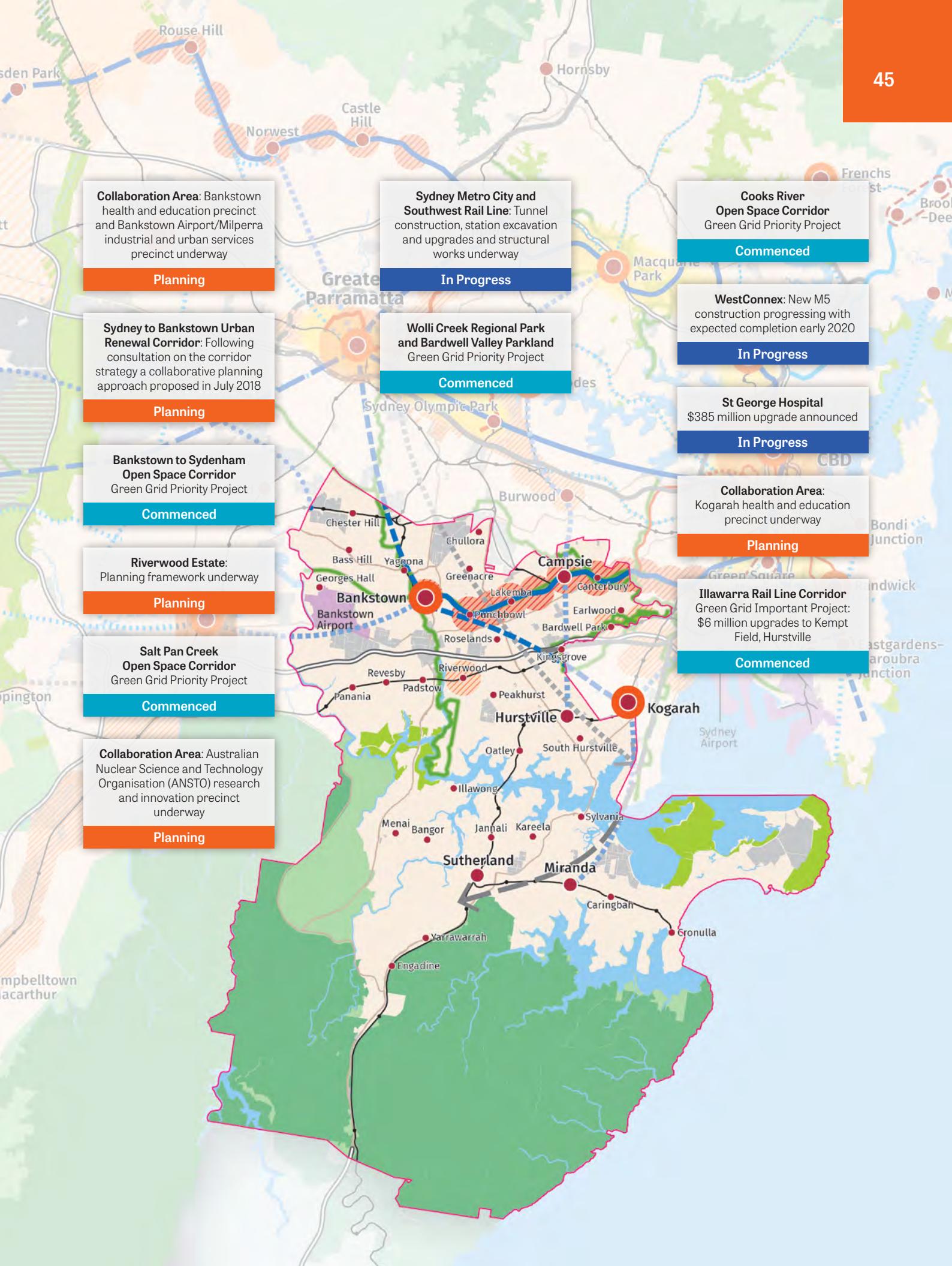
Of the three councils in the South District, Georges River and Canterbury-Bankstown councils are currently set to deliver LEP updates by mid-2020, following NSW Government funding to support an accelerated program to implement the District Plan. Sutherland council's LEP update is due by mid-2021.

**The following provides an overview of District-specific programs and planning using the four District Plan themes and the District Structure Plan Map:**

 Infrastructure and collaboration	<ul style="list-style-type: none"> <li><b>Collaboration Areas:</b> <ul style="list-style-type: none"> <li><b>Bankstown Health and Education Precinct:</b> NSW Government committed \$1.3 billion in March 2019 for Bankstown-Lidcombe Hospital upgrades and Western Sydney University has revealed their concept design for their new campus in the centre, set to open in early 2022. The wider planning of the Collaboration Area has commenced and includes Bankstown Airport and Industrial surrounds.</li> <li><b>ANSTO innovation precinct:</b> \$12.5 million funding for expansion announced and Collaboration Area planning commenced.</li> <li><b>Kogarah:</b> Collaboration Area planning underway.</li> </ul> </li> <li><b>School Infrastructure:</b> Upgrades underway or complete for seven primary schools and four high schools in the district. Thirteen existing public schools are sharing open space with the public under the <i>Share Our Space Program</i>.</li> </ul>
 Liveability	<ul style="list-style-type: none"> <li><b>A place-based approach</b> is being developed by councils in the preparation of Local Strategic Planning Statements which are due to commence exhibition by 1 October 2019.</li> <li><b>Local Housing Strategies:</b> being developed by councils will identify their response to housing need and help inform 6–10 year housing targets.</li> <li><b>Housing targets:</b> As a combined total, the South District is on track to meet the 0–5 year housing target for mid 2016–mid-2021 of 23,250 new dwellings.</li> <li><b>Arts, Culture and Sport:</b> Sutherland Council have chosen a design for the \$22 million renovation of Sutherland Entertainment Centre following public consultation March–April 2019.</li> </ul>
 Productivity	<ul style="list-style-type: none"> <li><b>Strategic Centres:</b> <ul style="list-style-type: none"> <li><b>Bankstown and Kogarah:</b> focus on Collaboration Area planning along with Innovation precinct at ANSTO outlined above.</li> <li><b>Hurstville:</b> Georges River Council resolved to endorse their Hurstville City Centre Urban Design Strategy, with a focus on reinforcing the role of Hurstville as the gateway to southern Sydney.</li> </ul> </li> </ul>
 Sustainability	<ul style="list-style-type: none"> <li><b>Greater Sydney Open Space Program:</b> 2018–19 funding of \$6 million committed for Georges River Council to secure and improve green space.</li> <li><b>Five Million Trees Program:</b> funding of over \$840,000 for Sutherland and Georges River Councils to expand urban tree canopy.</li> </ul>

**Key focus areas emerging for local strategic planning in the District as advised by councils include:**

- Collaboration** to coordinate major infrastructure investments with the staging and location of growth
- Increasing investment** in fine-grain street level amenity and public domain
- Ageing demographic** requires changing social and community infrastructure needs
- A focus on active transport** to connect and strengthen centres
- Opportunities** for more intense and diverse employment uses in industrial lands
- Importance** of urban tree canopy cover and landscaped areas in responding to climate change and creating great places.

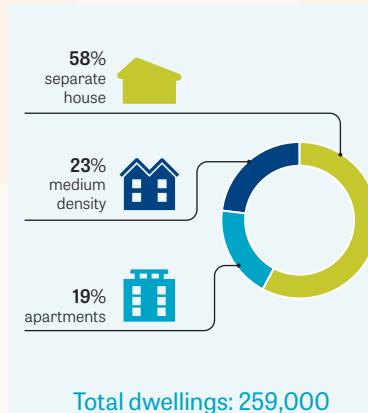
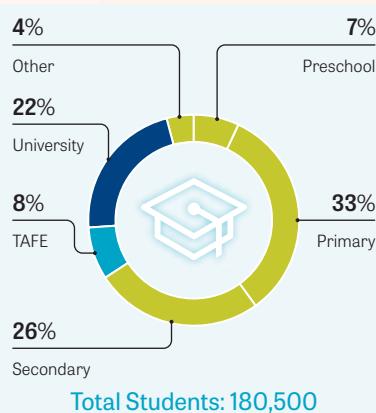
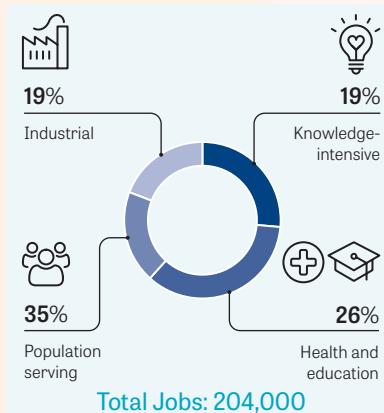


## Tree Canopy Cover



# Evolving to a Metropolis of Three Cities

## PI 1 Jobs, education and housing



### Job types (2016)

The South District is home to **10%** of the Region's jobs and **16%** of the Region's population. In 2016, **43%** of the District's working residents worked within the District. Between 2006–2016 the South District attracted **7%** of the Region's jobs growth and **12%** of the Region's population increase. This means the District population increase has been faster than jobs growth. In 2016, **36%** of the District's jobs were located in industrial precincts and **22%** were in metropolitan or strategic centres. Growing centres and supporting new industries will help strengthen jobs growth in the District.

### Education type (2016)

Of the total population of 741,500, 24% (180,500 people) were students in 2016. In 2016, primary school students were the highest share of all students in the District at **33%**. This means there is a strong pipeline emerging for secondary and tertiary education. **30%** of students that lived in the District were studying at a university or TAFE. There has been a major increase in university students of **74%** between 2006–2016 to 40,500 students.

### Housing type (2016)

In 2016, there were **259,000 dwellings** in the District. This includes 17,900 new dwellings in the period 2006–2016, which is a **7%** increase in total dwellings.

The types of households that occupied these total dwellings included:

- **39%** couples with children;
- **21%** couples with no children; and
- **19%** lone person households.

The largest total increase in household type between 2006–2016 was couples with children, which increased by 9,400 households (**11%**).

## PI 2 30-minute city – network capability

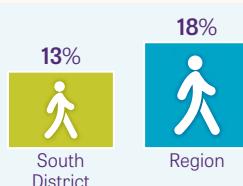


### Access to metropolitan and strategic centres (2018)

The network capability tool measures 30-minute travel by public transport (based on current infrastructure and 2018 timetabled service provision in the 6am-10am morning peak). It shows:

- **24%** of the District's dwellings are within 30-minutes by public transport to a metropolitan centre or cluster; and
- **98%** of the District's dwellings are within 30-minutes by public transport to a metropolitan or strategic centre.

## PI 3 Walkable places

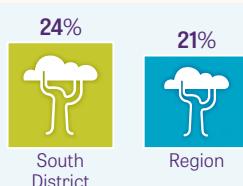


### All walking trips (2017-18)

In 2017, **13%** of all trips in the South District were walking trips, while **18%** of all trips across the region were walking trips. Walking distance to open space becomes more important as densities increase, as does the need for public spaces. Measured using the street network, across the District:

- **66%** of low-medium density dwellings are located within 400 metres walk to open space; and
- **34%** of high-density dwellings are located within 200 metres walk to open space.

## PI 4 Addressing urban heat



### Tree canopy (2016)

Over the 2018–19 summer Bankstown experienced **20 days** over 35°C and Canterbury experienced **9 days** over 35°C. Green infrastructure including trees and other vegetation as well as water in the landscape are an important part of place-making and can also help mitigate urban heat.

Currently, the South District has a slightly higher proportion of tree canopy cover in the urban area (**24%**) compared to the Greater Sydney Region as a whole (**21%**).

# 3.5 Western City District Plan Implementation Report

There are eight councils in the Western City District. Of these, Camden, Campbelltown, Fairfield, Liverpool, Penrith and Wollondilly councils have received funding to accelerate delivery of LEP updates by mid-2020 as part of the Western Sydney City Deal. Hawkesbury and Blue Mountains councils' LEP updates are due by mid 2021.

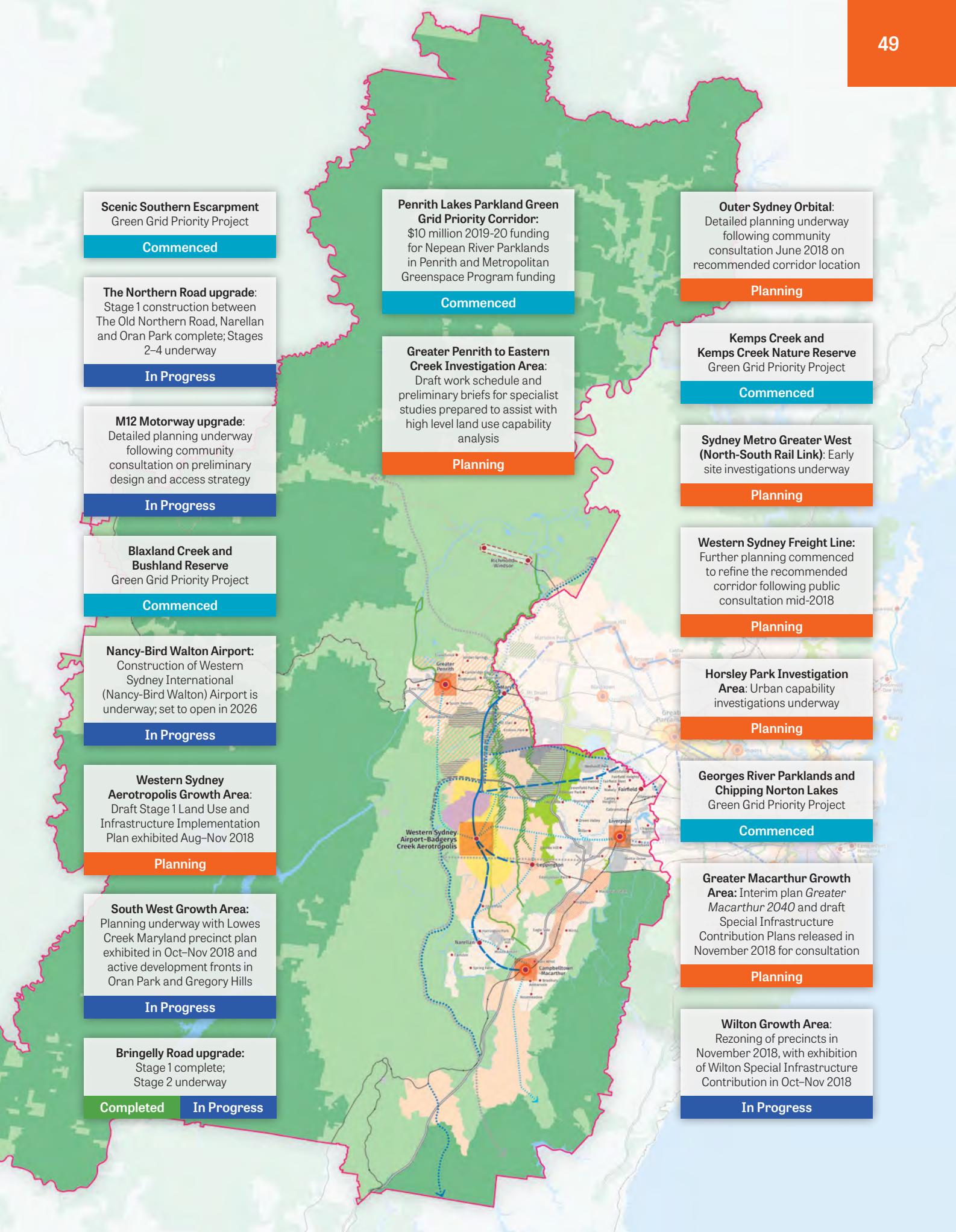
**The following provides an overview of District-specific programs and planning using the four District Plan themes and the District Structure Plan Map:**

 <b>Infrastructure and collaboration</b>	<ul style="list-style-type: none"> <li><b>Collaboration Areas:</b> Place Strategies delivered for Penrith and Liverpool (December 2018); Campbelltown underway.</li> <li><b>Health:</b> Liverpool health and education precinct \$3.5m funding committed for 2018–19; Nepean Hospital redevelopment underway; Campbelltown-Macarthur health and education precinct hospital redevelopment underway.</li> <li><b>Schools Infrastructure:</b> Construction recently completed or underway for five new primary schools, four new high schools and upgrades for 10 public schools and 10 high schools. Twenty existing primary schools and six high schools are sharing open space with the public under the Share Our Space Program.</li> </ul>
 <b>Liveability</b>	<ul style="list-style-type: none"> <li><b>A place-based approach</b> is being developed by councils in the preparation of Local Strategic Planning Statements which are due to commence exhibition by 1 October 2019.</li> <li><b>Local Housing Strategies:</b> being developed by councils will identify their response to housing need and help inform 20-year housing targets.</li> <li><b>Housing targets:</b> As a combined total, the Western City District on track to meet the 0–5 year housing target for mid-2016 – mid-2021 of 39,850 new dwellings.</li> <li><b>City Deal Liveability Fund:</b> All eight councils share in \$150 million funding allocated in late 2018.</li> </ul>
 <b>Productivity</b>	<ul style="list-style-type: none"> <li><b>Western Sydney City Deal:</b> Investment and jobs growth (see details over).</li> <li><b>Liverpool Collaboration Area:</b> Place Strategy transitioning to implementation phase and \$41 million for health and education precinct.</li> <li><b>Penrith Place Strategy:</b> awaiting finalisation of flooding mitigation approach.</li> <li><b>Western Sydney Aerotropolis Core</b> – precinct planning underway by Planning Partnership.</li> </ul>
 <b>Sustainability</b>	<ul style="list-style-type: none"> <li><b>Greater Sydney Open Space Program:</b> funding of \$21 million for four Western City District councils to secure and improve green space.</li> <li><b>Five Million Trees Program:</b> funding of over \$1.5 million to expand urban tree canopy.</li> <li><b>Hawkesbury Nepean Taskforce:</b> Hawkesbury–Nepean Flood Management Review to include a new regional flood study. New flood signage has recently installed.</li> <li><b>South Creek Strategy Sage 1</b> – finalised by NSW in consultation with State agencies and councils.</li> </ul>

**Key focus areas emerging for local strategic planning in the District as advised by councils include:**

- Leveraging** significant investment in Western Sydney Aerotropolis and Sydney Metro Greater West (North-South Rail Link) to increase job containment
- Co-ordination** of infrastructure and growth across local and State-led planning and development including planning for the metropolitan rural area and expansion of agriculture and agribusiness
- Collaboration** to deliver integrated water management and implement South Creek design principles
- Working with** local aboriginal communities to strengthen economic self-determination

- Opportunities** for tourism and creative industries to expand
- Urban cooling** strategies to mitigate urban heat island effects including expanding urban tree canopy
- Mitigation** from and reduction of flooding, bushfire and air quality hazards
- Protecting** and enhancing biodiversity and areas of high environmental significance, including wetlands and remnant bushland
- Regional solutions** to waste management to deliver more efficient outcomes

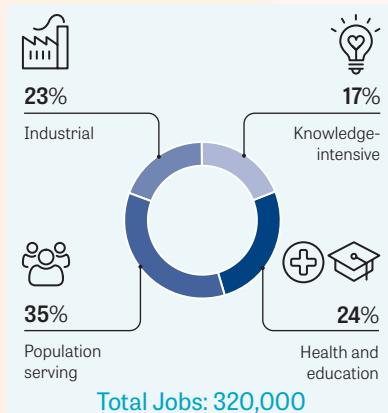


## Tree Canopy Cover



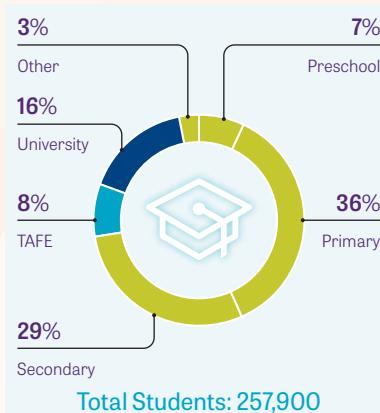
# Evolving to a Metropolis of Three Cities

## PI 1 Jobs, education and housing



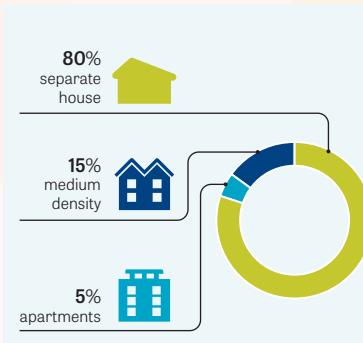
### Job types (2016)

The Western City District is home to **15%** of the Region's jobs and **23%** of the Region's population. In 2016, **57%** of the District's working residents worked within the District. Between 2006–2016 the Western City District attracted **16%** of the Region's jobs growth and **20%** of the Region's population increase. This means the District population increase has been faster than jobs growth. In 2016, **33%** of the District's jobs were located in industrial precincts and **32%** were in metropolitan or strategic centres. Growing centres and supporting new industries will help strengthen jobs growth in the District.



### Education type (2016)

Of the total population of 1,056,100, 24% (257,900 people) were students in 2016. In 2016, primary school students were the highest share of all students in the District at **36%**. This means there is a strong pipeline emerging for secondary and tertiary education. **24%** of students that lived in the District were studying at a university or TAFE. There has been an increase in university students of **86%** between 2006–2016 to 42,400 students.



### Housing type (2016)

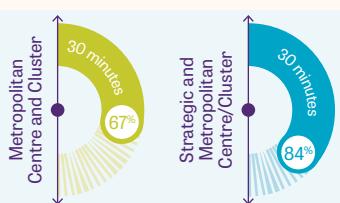
In 2016, there were **354,000 dwellings** in the District. This includes 42,000 new dwellings in the period 2006–2016, which is a **13%** increase in total dwellings.

The types of households that occupied these total dwellings included:

- **40%** couples with children;
- **20%** couples with no children; and
- **17%** lone person households.

The largest total increase in household type between 2006–2016 was couples with children, which increased by 12,500 households (**42%**).

## PI 2 30-minute city – network capability



### Access to metropolitan and strategic centres (2018)

The network capability tool measures 30-minute travel by public transport (based on current infrastructure and 2018 timetabled service provision in the 6am–10am morning peak). It shows:

- **67%** of the District's dwellings are within 30-minutes by public transport to a metropolitan centre or cluster; and
- **84%** of the District's dwellings are within 30-minutes by public transport to a metropolitan or strategic centre.

## PI 3 Walkable places

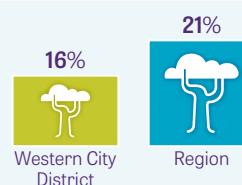


### All walking trips (2017-18)

In 2017, **10%** of all trips in the Western City District were walking trips, while **18%** of all trips across the region were walking trips. Walking distance to open space becomes more important as densities increase, as does the need for public spaces. Measured using the street network, across the District:

- **58%** of low-medium density dwellings are located within 400 metres walk to open space; and
- **29%** of high-density dwellings are located within 200 metres walk to open space.

## PI 4 Addressing urban heat



### Tree canopy (2016)

Over the 2018–19 summer Penrith experienced **37 days** over 35°C and Campbelltown (Mount Annan) experienced **24 days** over 35°C.

Green infrastructure including trees and other vegetation as well as water in the landscape are an important part of place-making and can also help mitigate urban heat.

Currently, the Western City District has a lower proportion of tree canopy cover in the urban area (16%) compared to the Greater Sydney Region as a whole (21%).

For details of data source please refer to Greater Sydney Dashboard

The Western City District is the focus of the Western Sydney City Deal. There are 38 commitments under the Western Sydney City Deal, grouped under six domains. Key milestones delivered to date are listed below. More information is available at [www.wscd.sydney](http://www.wscd.sydney).

City Deal Domain	Connectivity	Jobs for the Future	Skills and Education	
<b>Vision</b>	<p>The new Western Parkland City will be one of Australia's most connected cities. In an emerging 30-minute city, innovative public transport, aviation and digital infrastructure will bring residents closer to jobs, centres, education and the world.</p>	<p>The Western Parkland City will create 200,000 new jobs across a wide range of industries over the next 20 years. The Airport and Aerotropolis will attract infrastructure, investment and knowledge-intensive jobs, and the benefits will flow into health and education, retail, hospitality, and industrial activities that will power the City.</p>	<p>Residents of the Western Parkland City will have access to the best in education and skills training opportunities. A new university, schools and VET (vocational education and training) facilities will align with the high skilled businesses and industries of the Aerotropolis.</p>	
<b>Key milestones</b>	<p><b>Rail for the Western Parkland City</b> The business case for the first stage of the Sydney Metro Greater West (north-south rail line) between St Marys and the Aerotropolis is currently in development. An integrated project team has been established within Sydney Metro and targeted industry engagement has commenced.</p>	<p><b>Investment and industry attraction</b> The Western Sydney Investment Attraction Office (WSIAO) has been established (October 2018) to undertake proactive investment attraction working with key stakeholders domestically and internationally and is supported by the Investment Attraction Fund.</p>	<p><b>Education and skills</b> A temporary Skills Exchange by TAFE NSW located near the airport is planned for 2019 to provide local training for the workers needed to construct the airport and other major projects.</p>	
	<p><b>Integrated transport program</b> Work is underway on the business case for an integrated transport program for Western Sydney involving identification of rapid bus routes to service the Aerotropolis.</p>	<p><b>Expanding agribusiness opportunities</b></p>	<p>Stakeholder engagement with 400 key strategic partners across 120 organisations to date. Two key anchor tenants have signed Memoranda of Understanding. The NSW Department of Industry completed the Production Possibilities report and an Integrated Intensive Production Hub report. Agribusiness Precinct Symposium held on 18 February 2019.</p>	
	<p><b>Digital connectivity and smart technology</b> A tri-government Digital Commitments Steering Committee, including Western Sydney Airport (WSA) Corporation, has been established. Scoping activities were undertaken to determine the vision, objectives and proposed outcomes of the Digital Action Plan.  Infrastructure NSW has commenced drafting the 5G Strategy, drawing on expert advice from the Australian Department of Communications and the Arts and the telecommunications industry associations. Work has commenced across Australian, NSW and local governments to audit public data sets in line with open-data principles.</p>	<p><b>Support Indigenous businesses to thrive</b> An Interim Business Hub has been established to provide immediate access to support for indigenous businesses and entrepreneurs. The expansion of Opportunity Hub services in Campbelltown, designed to connect Indigenous school leavers with jobs, is progressing with the engagement of a service provider to commence services in Campbelltown.</p>	<p><b>More job opportunities</b> Western Sydney International (Nancy-Bird Walton) Airport has committed to a comprehensive package of employment targets.  The National Disability Insurance Scheme Quality and Safeguards Commission (NDIS Commission) opened in Penrith on 1 July 2018.  The identification of NSW Government real property holdings underpins a review of under-utilised land and assets to drive economic growth.</p>	<p><b>Building partnerships through an Aerospace Institute</b> The NUW Alliance (University of Newcastle, University of NSW Sydney, University of Wollongong), Western Sydney University and the NSW Government signed a Statement of Intent to jointly deliver a world class higher education and research presence specialising in STEM (Science, Technology, Engineering and Mathematics) by 2026.  The NSW Government is committed to building partnerships with educational providers to prepare students for future job opportunities in the aerospace and aviation industries and with vocational links to the airport.</p>

The City Deal, signed on 4 March 2018, brings together the Australian and New South Wales governments and the eight local councils of the Western City District to deliver transformative change to the region over the next 20 years. The City Deal will be instrumental in delivering the vision of the Western Parkland City.

Liveability and the Environment	Planning and Housing	Implementation and Governance
<p>The Western Parkland City has a unique landscape that is surrounded by protected natural assets. Its future neighbourhoods will be even more liveable and sustainable. Local project funding will create healthy and active communities that build on their strengths and support open spaces.</p>	<p>Innovative approaches to planning for and delivering housing will ensure that growth is balanced with maintaining the local character of the Western Parkland City.</p>	<p>The Australian, NSW and local governments will work together to support the growth, success and sustainability of the Western Parkland City.</p>
<p><b>Amenity and liveability across the Western Parkland City</b></p> <p>The Liveability Program was launched in late 2018. First round applications were invited from the eight councils of the City Deal and successful projects valued at \$149.82 million were announced in January 2019.</p>	<p><b>\$30 million Western Parkland City housing package</b></p> <p>The Greater Sydney Region Plan and Western City District Plan establish the 5-year minimum housing supply target for each local government area and 20-year district housing targets. All eight councils have completed a review of their existing Local Environmental Plans and identified areas that require alignment with the District Plans. Preparation of Local Strategic Planning Statements is underway.</p>	<p><b>Enduring tri-government governance</b></p> <p>Governance bodies (Leadership Group, Implementation Board, Coordination Committee and associated sub-committees) were established in early 2018. The Delivery Office (with tri-government staffing) manages the ongoing governance arrangements for the City Deal.</p>
<p><b>Protect and preserve environmental assets and parkland character</b></p> <p>A contract has been awarded to progress the detailed design and construction of the new Herbarium at Mount Annan (Stage 1) - Western Sydney Centre of Innovation in Plant Sciences.</p> <p>Stage 1 of the South Creek strategy has been finalised by Infrastructure NSW in consultation with State agencies and councils.</p>	<p>In consultation with Blacktown and Penrith councils, the NSW Department of Planning, Industry and Environment has prepared a draft work schedule and preliminary briefs for specialist studies for the Greater Penrith to Eastern Creek Investigation Area. A high level land use capability analysis to produce scenarios is to be tested by the specialist studies.</p>	<p>Performance Indicators and baseline metrics have been developed for the implementation plan. The development of performance measures is an ongoing process that will evolve and adapt over time through experience and the emergence of new data.</p> <p>The Western City and Aerotropolis Authority (WCAA) was established in November 2018 as master planner and master developer of the Aerotropolis. The WCAA comprises a CEO (appointed in December 2018) and an ongoing Chair and four Board Members nominated by the Australian and NSW governments.</p>
<p><b>Streamlined environmental approvals</b></p> <p>Work has commenced on the draft Cumberland Plain Conservation Plan and the assessment of potential impacts arising from its implementation. The Conservation Plan will assess 200,000 hectares of Western Sydney across the Hawkesbury, Blacktown, Penrith, Fairfield, Liverpool, Campbelltown and Wollondilly local government areas. Progress includes comprehensive vegetation mapping, species modelling to predict the probable location of key species and data resulting from detailed on-ground flora and fauna surveys undertaken by experienced ecologists.</p>	<p><b>A partnership approach to planning</b></p> <p>The Planning Partnership is now fully operational and has commenced the following three priority projects: Uniform Engineering and Design Standards, Common Planning Assumptions and Precinct Planning for the Stage 2 Land Use and Infrastructure Implementation Plan (LUIIP) for the Western Sydney Aerotropolis Growth Area.</p>	<p><b>Community partnership</b></p> <p>Work has commenced to map the existing Aboriginal governance arrangements, key policies and Aboriginal projects underway across the three levels of government in the Western Parkland City.</p> <p>Procurement is currently under way for a digital engagement tool which will jointly display current government engagements in the Western Parkland City across City Deal partners. This will facilitate ongoing arrangements for joined and coordinated community and stakeholder consultation.</p>
<p><b>Improve community health</b></p> <p>Statement of intent to establish a Health Alliance framework and concept has been developed and adopted by Health Alliance partners.</p>	<p><b>Innovative planning for future infrastructure needs</b></p> <p>The Western Sydney Aerotropolis Land Use and Infrastructure Implementation Plan (LUIIP) was released for public exhibition in August 2018.</p> <p>The first two Western Parkland City Growth Infrastructure Compacts have commenced with workshops to develop growth scenarios.</p>	

# 4 References

1. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
2. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
3. *Source: Transport for NSW*
4. *Source: Transport for NSW, Household Travel Survey 2007/08 – 2017/18*
5. *Source: NSW Department of Planning, Industry and Environment, NSW Urban Heat Island to Modified Mesh Block 2016*
6. *A Metropolis of Three Cities – Vision pp 6*
7. *A Metropolis of Three Cities – Housing the city pp 46*
8. *A Metropolis of Three Cities pp 80*
9. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
10. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
11. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
12. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
13. *Source: See Dashboard – Housing the city: Australian Bureau of Statistics, Census of Population and Housing 2006, 2016. STRD Dwelling Structure*
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15. *Transport for NSW Greater Sydney Services and Infrastructure Plan pp 7 and 10*
16. *Future Transport 2056 – Sustainability pp 28*
17. *Source: See Dashboard – Jobs and skills for the city: Australian Bureau of Statistics, Census of Population and Housing 2016. POW Place of Work.*
18. *A Metropolis of Three Cities – Sustainability Context pp 147*
19. *A Metropolis of Three Cities – Productivity Context pp 80*
20. *A Metropolis of Three Cities – Table 4 pp 122*
21. *Source: Transport for NSW*
22. *Source: Transport for NSW*
23. *Source: Transport for NSW*
24. *Source: Transport for NSW*
25. *A Metropolis of 3 Cities – Objective 7 pp. 55 – Ekelund et. al. 2015 American Journal of Clinical Nutrition ajcn.114.100065.7.*
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27. *Source: Australian Bureau of Statistics, Census of Population and Housing 2016*
28. *A Metropolis of Three Cities – Objective 26 pp 152*
29. *Source: Greater Sydney Commission analysis. Public Open Space Audit 2016, NSW Department of Planning, Industry and Environment*
30. *Climate Council, Heatwaves Longer, Hotter, More Often, 2014*
31. *Western City District Plan Planning Priority W15 Increasing urban tree canopy cover and delivering Green Grid connections pp. 119 /NSW Office of Environment and Heritage Government 2015, Technical Guidelines for Urban Green Cover in NSW, NSW Government, Sydney*
32. *Source: Bureau of Meteorology, 2019*
33. *Source: Bureau of Meteorology, 2019*
34. *Office of Environment and Heritage Adapting to Climate Change – Green Cover (<https://climatechange.environment.nsw.gov.au/Adapting-to-climate-change/Green-Cover>)*
35. *See Dashboard: Heat vulnerability index 2016, NSW Department of Planning, Industry and Environment, NSW Heat Vulnerability Index to ABS Statistical Area Level 1 2016*
36. *Source: NSW Department of Planning, Industry and Environment, NSW Urban Heat Island to Modified Mesh Block 2016*
37. *Source: NSW Department of Planning, Industry and Environment, NSW Urban Heat Island to Modified Mesh Block 2016*
38. *Source: NSW Department of Planning, Industry and Environment, Greater Sydney Region Urban Vegetation Cover to Modified Mesh Block 2016*
39. *NSW Department of Planning, Industry and Environment and Adapt NSW (2015) Heatwaves Climate Change Impact Snapshot*
40. *Source: NSW Department of Planning, Industry and Environment, Greater Sydney Region Urban Vegetation Cover to Modified Mesh Block 2016*

## Greater Sydney Commission

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