

## **ITEM-4 LMM 22/02/2022 - TREE PLANTING COMMITMENT TO INCREASE CITY'S URBAN FOREST**

### **MOTION**

That City of Newcastle:

1. Notes our long-standing commitment to the protection, and increased planting, of street and park trees across the City of Newcastle, acknowledging the importance of additional shade and habitat in an urban environment;
2. Notes the impact of improved urban canopies on addressing urban heat islands and their impacts on people, their health and wellbeing and that of urban wildlife;
3. Invests \$4.5 million to deliver new street and park trees over the next three years to increase green cover as part of the City's annual tree-planting investment;
4. Acknowledges that increasing the City's urban canopy will reduce the urban heat island effect, absorb and store more carbon to help further drive down the City's emissions, provide more food and shelter for wildlife, assist to purify the City's air and water, and improve the health and well-being of our residents, while making our streets and parks more beautiful and liveable for all.

### **BACKGROUND:**

#### **CLIMATE CHANGE IMPACTS ON URBAN HEAT**

#### **KEY POINTS**

- Climate change is increasing average temperatures across NSW. We are already seeing an increase in annual average temperatures, and the number and duration of extreme hot weather events. In large cities, average temperatures can be 1°C to 3°C higher than average rural temperatures.
- These higher temperatures are caused by the materials used in buildings and infrastructure, which absorb more heat compared with natural environments. The lower levels of vegetation in urban areas also reduces the natural cooling that plants provide. Urban heat can be increased by human activities that generate heat, such as transport, industry, and electricity usage.
- Urban heat and the urban heat island effect are increasing the heat-related impacts of climate change in urban areas, making increased temperatures and extreme hot weather events more severe.
- Strategies to help urban areas reduce the impacts of urban heat include reducing greenhouse gas emissions, increasing vegetation and green spaces, providing shade structures and water misting, using reflective building materials, and incorporating sustainable and water-sensitive design practices into urban planning and new developments.

#### **Urban heat and the urban heat island effect**

In NSW, close to 90% of our population lives in towns or cities. Urban environments are generally hotter than natural and rural environments. In large cities, average temperatures can be 1°C to 3°C higher than average rural temperatures. Temperatures can vary across the city, with some parts experiencing even higher temperatures.

Urban heat and the urban heat island effect impact people's health and wellbeing, economic productivity, urban wildlife and ecosystems, and urban infrastructure and services.

The urban heat island effect occurs because urban environments tend to trap more heat than natural environments. Heat (mostly from the Sun) is absorbed by building materials and surfaces such as bricks, roads, carparks and concrete and then radiated into the surrounding area. In some cases, urban surfaces and buildings can be up to 10–20°C warmer than surrounding air temperatures. These materials can continue releasing heat after air temperatures have cooled, leading to higher evening temperatures in urban areas.

Urban areas typically have less vegetation compared to rural areas. Vegetation helps to naturally cool surrounding areas by shading building surfaces, blocking radiation from the sun, and releasing moisture into the atmosphere. Water also provides natural cooling, however urban surfaces such as roads causes rainfall to run off quickly, reducing the amount that can be absorbed by the landscape.

The main cause of heat driving the urban heat island affect is radiation from the Sun, but humans can increase the effect through activities that generate heat, such as transport (vehicle engines), industry, and electricity usage (such as hot air expelled by air conditioning units).

Reducing urban temperatures is particularly important for some places in NSW, such as Western Sydney, and where future population growth is planned to occur. CSIRO and Bureau of Meteorology estimate that Western Sydney will continue to heat up and experience more extreme heat days. For example, on 4 January 2020, Penrith was the hottest place on Earth at 48.9°C and in 2019 Parramatta endured 47 days with temperatures over 35°C.

### **How climate change is affecting urban heat**

Climate change is increasing average temperatures across NSW. We are already seeing an increase in annual average temperatures, and the number and duration of extreme hot weather events. Urban heat and the urban heat island effect are increasing the heat-related impacts of climate change in urban areas, making increased temperatures and extreme hot weather events more severe, and more difficult to manage.

### **Adapting to increased urban heat**

#### *Reducing greenhouse gas emissions*

Temperatures will continue to rise until we reduce greenhouse gas emissions to limit climate change. State governments, local councils, communities and households all have a role in reducing emissions and creating a sustainable future for NSW.

#### *Increasing green cover*

Increasing green cover in urban areas help reduce the urban heat island effect by shading built surfaces that absorb heat, and by releasing water vapour through vegetation (known as evapotranspiration). In some locations, it is estimated that evapotranspiration can reduce peak summer temperatures by up to 5°C.