4. Climate

4.1 Overview

The climate of the Larrimah area, within the central Sturt Plateau, is a semi-arid monsoonal regime with distinctive Wet and Dry seasons. The Wet season is characterised by higher temperatures and higher humidity levels and experiences the majority of annual rainfall. The Dry season, in comparison, is characterised by lower temperatures, lower humidity and minimal rainfall. Total annual rainfall is strongly influenced by the presence or absence of the monsoon trough and associated cyclonic events during the Wet. The presence of these systems significantly increases Wet season rainfall, particularly where tropical lows or rain depressions impact the coast and move inland (Wilson *et al.* 1990).

There are distinctive differences between the climatic conditions affecting the central Sturt Plateau and the more humid strongly monsoonal areas further north, near the coast. Most obvious is the difference in average annual rainfall, which for Darwin (1 729 mm) is more than double that at Larrimah (787 mm). Similarly, the average number of rain days for Darwin is typically 1.5 times greater than that at Larrimah (BoM 2018).

Comparison of mean monthly temperature, relative humidity and evaporation also highlights differences between Larrimah and Darwin. Temperature ranges are greater at Larrimah, with lower minimums and higher maximums. Mean monthly minimum temperatures and humidity levels are lower throughout the entire year at Larrimah, while mean monthly maximum temperatures and evaporation rates are higher throughout the year (except during the Dry season when Darwin is higher) (BoM 2018).

4.2 Rainfall and evapotranspiration

Average annual rainfall at Larrimah (for the period 1889 to 2015) is 787 mm, while the average annual number of rain days for the same period is 71. Mean monthly rainfall is highest in the build-up and Wet season (September to April) with more than 98% of the average annual total rainfall falling at this time. On average, 82 mm of rain falls over 11 rain days during the build-up (September-November), while 693 mm falls over 60 rain days through the Wet season (December-April) (DSITIA 2015).

On average, monthly rainfall exceeds potential evapotranspiration at the height of the Wet season during the months of January and February (DSITIA 2015). Figure 4.1 illustrates more clearly the interaction between rainfall, evapotranspiration and number of rain days (based on mean monthly data) over the Wet and Dry seasons at Larrimah.

Average annual evapotranspiration for this location (for the period 1889 to 2015) is 1 920 mm. Mean monthly evapotranspiration reaches a maximum of 206 mm in October and declines to a minimum of 126 mm in June. On average, evapotranspiration exceeds average rainfall for 10 months each year between March and December. A negative water balance exists during this period and is at its peak between April and November when evapotranspiration exceeds average rainfall by more than 120 mm/month (see Figure 4.1). A decline in average evapotranspiration in February correlates with a decline in the number of days with maximum temperatures greater than 30°C (Table 4.1), and a peak in relative humidity measured during the hottest part of the day (Figure 4.2) (DSITIA 2015).