

Did you know?

The rainfall event that occurred in Western Australia on Thursday 9th and Friday 10th February 2017 is generally being referred to as a '1 in 50 year event'.

Significant flooding has been observed in river systems, as well as localised flooding within urban areas. However you may have been wondering why there was not more widespread flooding in urban areas – particularly since road pipe networks are typically only designed to carry smaller events (1 in 5 year ARI). The stormwater systems could have been conservatively designed, however the lack of flooding may also be due to these catchments not experiencing the type of storm that causes the most runoff.

The probability of a rainfall event is determined by analysing the volume of rainfall that fell over a particular duration. In this case, 117 mm of rainfall fell within a 27 hour period (Perth Metro Station). This is estimated to lie between a 1 in 20 year and 1 in 50 year ARI event. However most of the rainfall (83%) fell within a much shorter time period (12 hours) which is approximately a 1 in 50 year ARI event. If we look closer, 58.4mm fell in 2 hours. If this was an isolated 2 hour storm it would be considered more than a 1 in 100 year ARI event.

A large rainfall event does not necessarily lead to a flood of that same magnitude (i.e. a 1 in 50 year rainfall event does not always equal a 1 in 50 year flood). The size of the flood that results from rainfall is dependent on a number of hydrological factors (i.e. catchment size, slope, soil, vegetation cover, antecedent conditions, groundwater levels, etc.). The unique combination of factors causes a catchment to have a greater response to certain duration and intensity storms than others.

In general, very small and impermeable catchments (like small road catchments) have the greatest runoff when there is a short burst of very intense rainfall. Larger river catchments tend to have the greatest runoff when there is a longer period of less intense, but more sustained, rainfall. Therefore in the case of the February 2017 storm, the rainfall that fell over a 27 hour period, with the majority of rain falling within a 12 hour period, would have generally led to more runoff being generated in medium river catchments instead of very small road catchments.

Localised flooding in urban areas was observed in some areas. This is expected in land that serves as a drainage function but not necessarily in very small road catchments. Rather than being a repercussion of the rainfall event alone, flooding may have been influenced by other factors such as inflows from larger catchments upstream, trapped low points, culvert blockages, or under-designed systems. If you did experience this, it is recommended you review the possible other factors to determine if the flooding is acceptable and if not, look at measures to prevent it from happening again.



If you have any hydrological matters that you would like to discuss, we would be happy to help. Please contact Kristy Chandler (kristy.chandler@coterra.com.au) or Rebecca Epworth (rebecca.epworth@coterra.com.au).