South West rainfall and streamflow summary
Seasonal response update - October 2013

Summary
The following rainfall and streamflow summary for October 2013 is based on information from the Department of Water, Bureau of Meteorology (BoM), Department of Agriculture and Food (DAFWA), and the Water Corporation. This summary is produced monthly from May to October. Some of the information here is also presented in the context of seasonal response on the Department of Water website; go to www.water.wa.gov.au and follow the links under News & Events.

The following points summarise the current rainfall and streamflow conditions at October 2013:

- Rainfall during October was below average to above average throughout the South West Region with the exception of Geraldton Airport which did not receive any rainfall this month and registered its October rainfall as lowest on record.
- The year-to-date rainfall at all sites is average to highest on record, with the exception of Geraldton Airport, which has received below average rainfall this year.
- Two sites received very much above average streamflow in October – Mooranoppin Creek and Young River.
- Year-to-date streamflow at all sites has remained in the same categories as last month: well below average at Gingin; below average at Harvey, Hotham and Murray rivers; above average at Thompson Brook, Capel River, Mooranoppin Creek and Young River; and average at all other locations.

Photo: Denmark River at Lindesay Gorge
October rainfall and streamflow

Data from 31 rainfall stations across South West WA are summarised to show the October rainfall condition across the region in comparison to historical rainfall since 1975. The period post 1975 is used because there has been an observed reduction in rainfall and runoff in the south-west from 1975 in comparison to long-term averages.

Figure 1 (top) illustrates the rainfall pattern for October. Above average rainfall was recorded in the area between Mooranoppin Creek and Young River and decreased to average conditions moving westward. Below average rainfalls were recorded in the area bounded by Albany and the Margaret and Hotham rivers. Geraldton Airport recorded no rainfall in October resulting in its lowest on record category.

Rainfall across the state can be viewed at the Bureau of Meteorology’s website; go to www.bom.gov.au, follow the links to Climate > Maps – recent conditions > Rainfall, and select the Rainfall Deciles map, 1 month period and Western Australia area.

The Department of Water operates numerous river monitoring sites throughout Western Australia. Information from telemetered sites is available for viewing on the Department of Water website; go to www.water.wa.gov.au and follow the links under Tools & data > Monitoring and data > River level monitoring. A small subset of these sites is used in this report.

Seventeen telemetered streamflow gauges across South West WA were analysed for the month of October (Figure 1 - bottom). Streamflow throughout the South West followed a similar pattern to rainfall in October. Streamflow was well above average at Young River and Mooranoppin Creek, above average in the region between the Swan and Capel rivers and average in the coastal areas from Kalgan River to Wilyabrup Brook. Gingin Brook recorded below average streamflow for this month.

Figure 1 - Monthly decile ranges for rainfall (top) and streamflow (bottom) in South West WA, with reference to the 1975–2012 base period
Year-to-date rainfall and streamflow

The year-to-date rainfall (January to October 2013) is average to well above average throughout the majority of the South West Region (Figure 2 - top). The two exceptions are Mooranoppin Creek, with a highest on record category due to receiving average to highest on record rainfall each month this season. The category for Geraldton is below average due to average to lowest on record rainfall totals recorded each month this season.

Year-to-date rainfall across the state can be viewed at the Bureau of Meteorology’s website; go to www.bom.gov.au, follow the links to Climate > Maps – recent conditions > Rainfall, and select the Rainfall Percentages map, Year to date period and Western Australia area.

The year-to-date streamflow (Figure 2 – bottom) at all sites have remained in the same categories as last month. The Murray, Harvey and Hotham rivers recorded below average streamflow this season despite average to above average rainfall in this area. Similarly, Gingin has recorded well below average streamflow whilst receiving average rainfall this season.

In most areas, the year-to-date streamflow is generally one or two categories below the corresponding year to date rainfall.

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*Figure 2 - Year-to-date decile ranges (January to October 2013) for rainfall (top) and streamflow (bottom) for South West WA, with reference to the 1975–2012 base period*
South West storages

The Water Corporation produces monthly storage level graphs for all its dams throughout South West WA on its website. These graphs provide a comparison of the storage levels to the same time last year and the total capacity. To access the information go to www.watercorporation.com.au, navigate to Water supply & services > Rainfall, dam storage and water supply > Dam levels.

The Department of Water has developed rainfall indicators that are used to track the status of water level in numerous dams throughout South West WA.

Rainfall from 1 May to October 31 at Jarrahdale was 1008 mm. As a result, the streamflow into IWSS dams increased to 78 GL. This is a similar inflow amount to that of the 2011/12 season (86 GL at the same time of year) and well above levels of drier seasons such as 2012/13, 2010/11, 2006/07 and 2001/02.

The total IWSS dam storage for the Metropolitan region has increased by 18% since last month (from 207 GL in September to 244 GL by the end of October).

This year we are trialling the rainfall - inflow indicator with industry partners for Harvey, Logue, Stirling, Wellington and Harris dams. Due to above average rainfall Wellington and Harvey dams had sufficient inflow to reach capacity this season and Stirling dam was 89% full at the end of October. Harris and Logue Brook dams remain at similar levels to last month at 61% and 35% of capacity respectively.

Groundwater

The current average groundwater level can be viewed at the Department of Water’s website: www.water.wa.gov.au

From 1 January, an estimated 675 mm (±10%) of rainfall at Perth Airport is needed to recharge Gnangara groundwater levels to those recorded at the end of last winter. Rainfall from 1 January to 31 October at Perth Airport was 695 mm.
Rainfall outlook

The Bureau of Meteorology produces a three monthly outlook of the probability of exceeding the median rainfall. The probabilities are generated from the Predictive Ocean Atmosphere Model for Australia (POAMA), the Bureau of Meteorology’s dynamical climate model. The outlook for total rainfall over the January quarter (November to January) for Western Australia is shown in Figure 3. There is a low probability of exceeding the median rainfall in the South West Region, between 35% and 55%, indicating that average to dry conditions are expected this summer. The percent consistent figure shows a reasonable level of accuracy in the central areas of the south-west and less accuracy in the coastal areas.

Figure 3 - Probability of exceeding median rainfall (1981-2010) for November 2013 to January 2014 across Western Australia (left) and corresponding percent consistent map (right)
(Courtesy of Bureau of Meteorology, copyright Commonwealth of Australia reproduced by permission)

The Department of Agriculture and Food WA also produce statistical seasonal forecasts (SSF) of the most probable decile range. The forecast for the January quarter for South West WA is shown in Figure 4 (left). The most probable decile ranges over the majority of the South West are 2-3 (below average rainfall) and 4–7 (average rainfall). Inland areas near Darkin and Wagin are forecast to receive well below average rainfall this quarter (decile category of 1). Other areas near Mullewa, Westonia and Holt Rock are predicted to have above average rainfall (decile range of 8–9). The per cent consistent figure (Figure 4 - right) is above 60% across the majority of South West WA, indicating a reasonable level of consistency in the forecasts. Lower accuracy exists for forecasts in the Cape to Cape Region, the northern region stretching inland from Eneabba, and the coastal area between Ravensthorpe and Esperance.
Rainfall tracking

Seasonal tracking of rainfall is shown for Harvey, Albany, Katanning and Perth Airport (Figure 5). The year-to-date rainfall for 2013 is plotted against the historical rainfall ranges from 1975 to 2012. The DAFWA statistical seasonal forecast for the January quarter predicts below average rainfall across each of the four sites (tracking between median and dry scenario). Harvey and Albany will remain in the above average rainfall classification and Perth Airport and Katanning will remain in the average classification.