South West rainfall and streamflow summary
Seasonal response update – May 2013

Summary
The following rainfall and streamflow summary for May 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.

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

- May rainfall throughout the majority of the South West has been average to well above average.
- Year to date rainfall was above average at most sites and the highest on record at Mooranoppin Creek and Vasse River but below average at Kent River.
- Streamflow during May varied throughout South West WA ranging from well above average to well below average.
- Year to date streamflow is generally average to below average despite above average rainfall at most sites, which is not an unusual response for this time of year.

Photo: Young River
May rainfall and streamflow

Data from 31 rainfall stations across South West WA are summarised to show the May 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.

All but one site recorded average to well above average rainfall totals for the month of May. Well above average rainfall was recorded from Pinjarra to Northcliffe as well as at the Pallinup and Young Rivers. Kent River was the only site that recorded below average rainfall (Figure 1 - top).

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 May (Figure 1 - bottom).

The majority of streamflow across South West WA was average to well below average during May. Two sites, Collie River and Young River, recorded well above average streamflows.

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 May) recorded at the majority of sites are classified as either average or above average (Figure 2 - top). The year to date rainfall for Mooranoppin Creek is highest on record primarily due to receiving its highest January rainfall this year (142 mm). Vasse River also has its highest year to date rainfall on record due to the high rainfall months of March and May. Kent River is the only site that recorded below average year to date rainfall. This can be attributed to receiving average to below average rainfall months each month this year.

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 across the majority of South West WA is average to well below average (Figure 2 – bottom). Mooranoppin Creek has recorded a well above average streamflow to date.

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

The Water Corporation produces monthly storage level graphs of 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 of WA.

Subject to rainfall patterns, from 1 May around 360mm (+/- 26%) of rainfall at Jarrahdale is needed to start inflow into Integrated Water Supply Scheme (IWSS) dams. Rainfall from 1 May to 31 May at Jarrahdale was 188 mm. The start of inflow is dependent on the pattern of rainfall each year. If the winter starts with intense or continuous rainfall events, inflow may start with 270 mm of rainfall. If the winter rainfall pattern is light rains, or long periods between rainfall events, then 450 mm may be required to start inflow to IWSS dams.

There is little change in storage from May to June, indicating that inflow to the IWSS reservoirs has not yet started. Rainfall at Jarrahdale during the month of May has included three rainfall events and continuous light rains. Based on this rainfall pattern the start of inflow may occur at a lower rainfall trigger this year.

This year we are trialling the rainfall - inflow indicator with industry partners for Harvey, Logue, Stirling, Wellington and Harris dams. Inflow to these dams has not yet started.

**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 May at Perth Airport was 185 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 August quarter (June to August) for Western Australia is shown in Figure 3 (left). The majority of the state has a 50% chance of exceeding the June–August median rainfall. The probability is lower in the Wheatbelt and Great Southern regions, at 40% and higher in the Kimberley and Pilbara regions, between 60 and 70%. The per cent consistent figure (Figure 3 - right) shows moderate skill for the majority of the state, with low skill only in the Kimberley and parts of the Pilbara region, giving some uncertainty to predictions in those areas.

Figure 3 - Probability of exceeding median rainfall (1981-2010) for June to August 2013 across Western Australia (left) and corresponding per cent 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 August quarter for South West WA is shown in Figure 4 (left). The most probable decile ranges for the majority of the south west area is 4–7. Lower decile ranges of 2–3 are predicted from Gingin to Geraldton, as well as the Margaret River and Esperance areas. The per cent consistent figure (Figure 4 – right) shows high skill for the majority of the state at 65 to 75% consistent. Towards Esperance there is lower skill, at 50% consistent, suggesting some uncertainty of the predictions in this area.
Rainfall Tracking

Seasonal tracking of rainfall is shown for Harvey, Albany, Katanning and Perth Airport. The Year to Date rainfall for 2013 is plotted against the historical rainfall ranges from 1975 to 2012. The DAFWA SSF for the following three month period indicates that the most probable rainfall decile ranges for around the Harvey, Albany and Katanning areas are 4–7, which relate to the median scenarios, and 2–3 near Perth Airport, which relates to the Dry scenario.

Figure 5 – Rainfall year to date for Harvey (top left), Albany (top right), Katanning (bottom left) and Perth Airport (bottom right), with reference to the 1975–2012 base period.