# SOUTHERN BASINS PWA

## COFFIN BAY-A LENS

### Groundwater Level and Salinity Status Report

2012

Government of South Australia
Department of Environment, Water and Natural Resources

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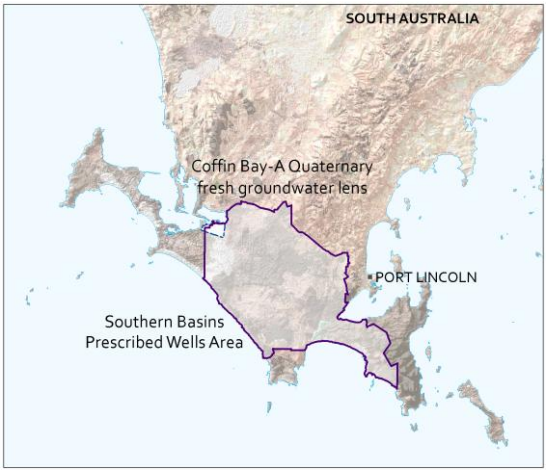
# 2012 SUMMARY




The Southern Basins Prescribed Wells Area (PWA) is located at the southern most part of the Eyre Peninsula, approximately 270 km west of Adelaide. It is prescribed under South Australia's *Natural Resources Management Act 2004* and a Water Allocation Plan provides for the sustainable use of the groundwater resources. The Coffin Bay-A lens is located in the north-west of the Southern Basins PWA.

Within the Southern Basins PWA there are two main sedimentary sequences containing groundwater that overlie basement rocks: the Quaternary limestone aquifer and the underlying Tertiary sands aquifer. The Quaternary limestone aquifer comprises a generally thin veneer of aeolianite sediments of the Bridgewater Formation and is continuous across the PWA. Areas within the Quaternary limestone aquifer defined by salinity of less than 1000 mg/L, such as the Coffin Bay-A lens, are described as a fresh groundwater lens in the current Water Allocation Plan. The main source of recharge to the Quaternary limestone aquifer is the direct infiltration of rainfall and groundwater flow is predominantly toward the nearest coastline in the Southern Basins PWA.

Licensed groundwater extractions occur predominantly from the Quaternary limestone aquifer. Metered extractions from the Coffin Bay-A lens totalled 98 ML in 2011–12, a 4% decrease from the previous water-use year (Fig. 1). This volume of extraction equates to 70% of the total allocation limit of 142 ML for the Coffin Bay-A lens and is 2% of the total licensed extractions from the Southern Basins PWA.

The sustainability of the groundwater resources in the Southern Basins PWA is highly dependent on recharge from rainfall. The historical data has indicated that trends of above or below-average rainfall can last for up to 25 years and greater recharge responses have been observed when rainfall occurs in high-intensity events. The Big Swamp rainfall station (number 18017), located about 20 km to the east of the Coffin Bay-A lens, recorded 476 mm of rainfall in 2012. This is over 85 mm less than the long-term average annual rainfall for that station. The month of June received rainfall significantly above its long-term monthly average, but July and September through to December recorded significantly below-average rainfall (Fig. 2).

Long-term groundwater level trends in the Coffin Bay-A lens show a positive correlation to rainfall recorded at the Big Swamp rainfall station, with a slight drop in levels recorded over the period of below-average rainfall from 1992 to 2008. Above-average rainfall in 2009 and 2010 has resulted in a recovery of groundwater levels. In 2012, three wells in Coffin Bay-A lens recorded a decline of up to 0.2 m in the maximum recovered groundwater level. Additionally, three wells recorded an increase of up to 0.04 m and one well recorded no change when compared to 2011 water level data (Fig. 3).

Within the Coffin Bay-A lens, groundwater salinity has been reasonably stable over the last 20 years, with a slight rise recorded in most observation wells since 2007. Salinities recorded in January 2012 are below 1000 mg/L (300–500 mg/L) (Fig. 4) and are lower than those recorded in January 2011.

The Coffin Bay-A lens of the Southern Basins PWA has been assigned a green status for 2012:

# 2012 STATUS  "No adverse trends, indicating negligible risk to the resource"

This means that the groundwater status was observed to be stable (i.e. no significant change) or improving over the reporting period. Continuation of these trends favours a very low likelihood of negative impacts on beneficial uses such as drinking water, irrigation or stock watering. The 2012 status for the Coffin Bay-A lens is supported by:

- no significant change in the maximum recovered groundwater level when compared to 2011 water level data
- an overall decline in salinity recorded in January 2012 when compared to January 2011 salinity data.

To view the *Southern Basins PWA groundwater level and salinity status report 2011*, which includes background information on hydrogeology, rainfall stations and relevant groundwater-dependent ecosystems, visit WaterConnect.

To view descriptions of all status symbols, click here.

For further details about the Coffin Bay-A lens, please see the Water Allocation Plan for the Southern Basins Prescribed Wells Area.

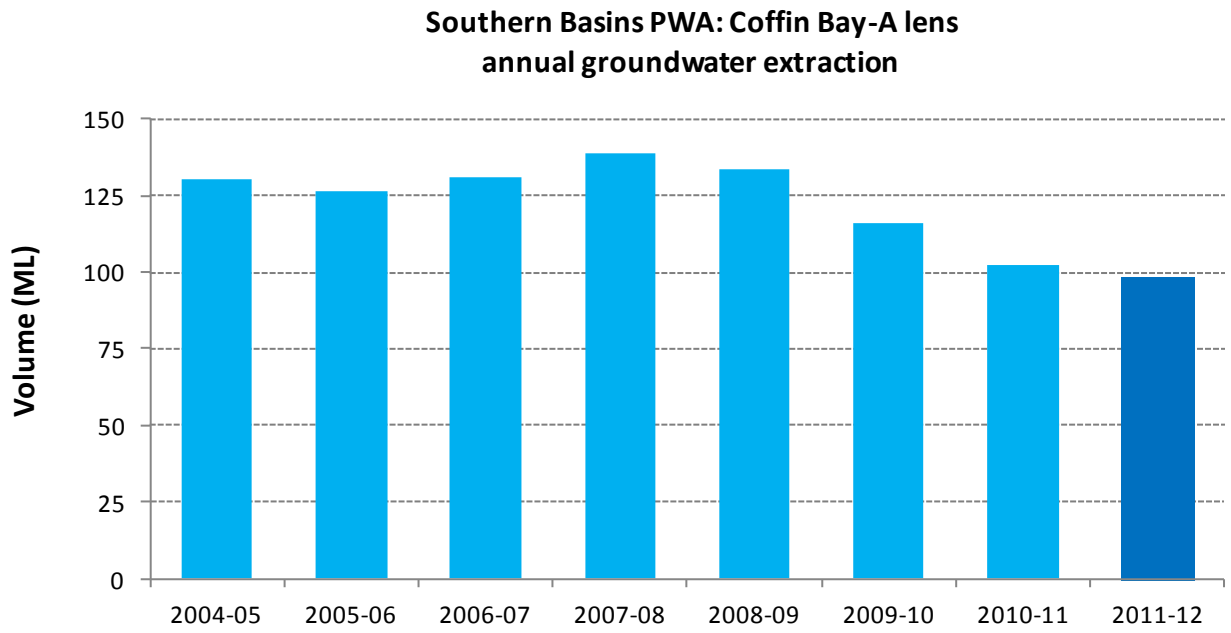



Figure 1. Historical licensed groundwater use for the Coffin Bay-A lens of the Southern Basins Prescribed Wells Area

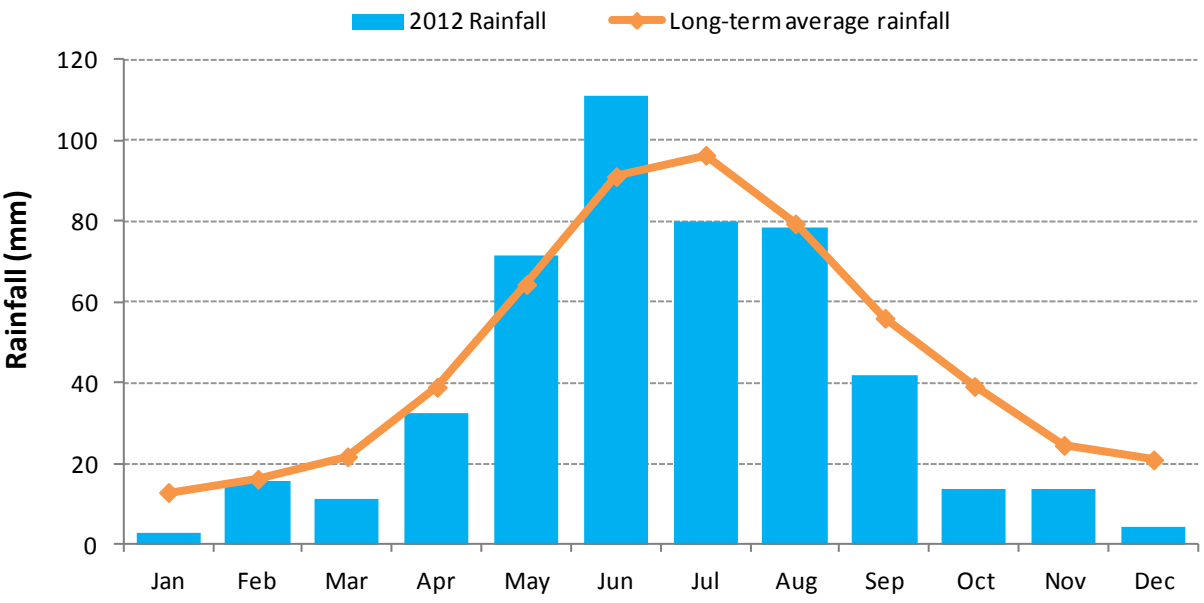



Figure 2. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Big Swamp rainfall station (number 18017) in the Southern Basins Prescribed Wells Area

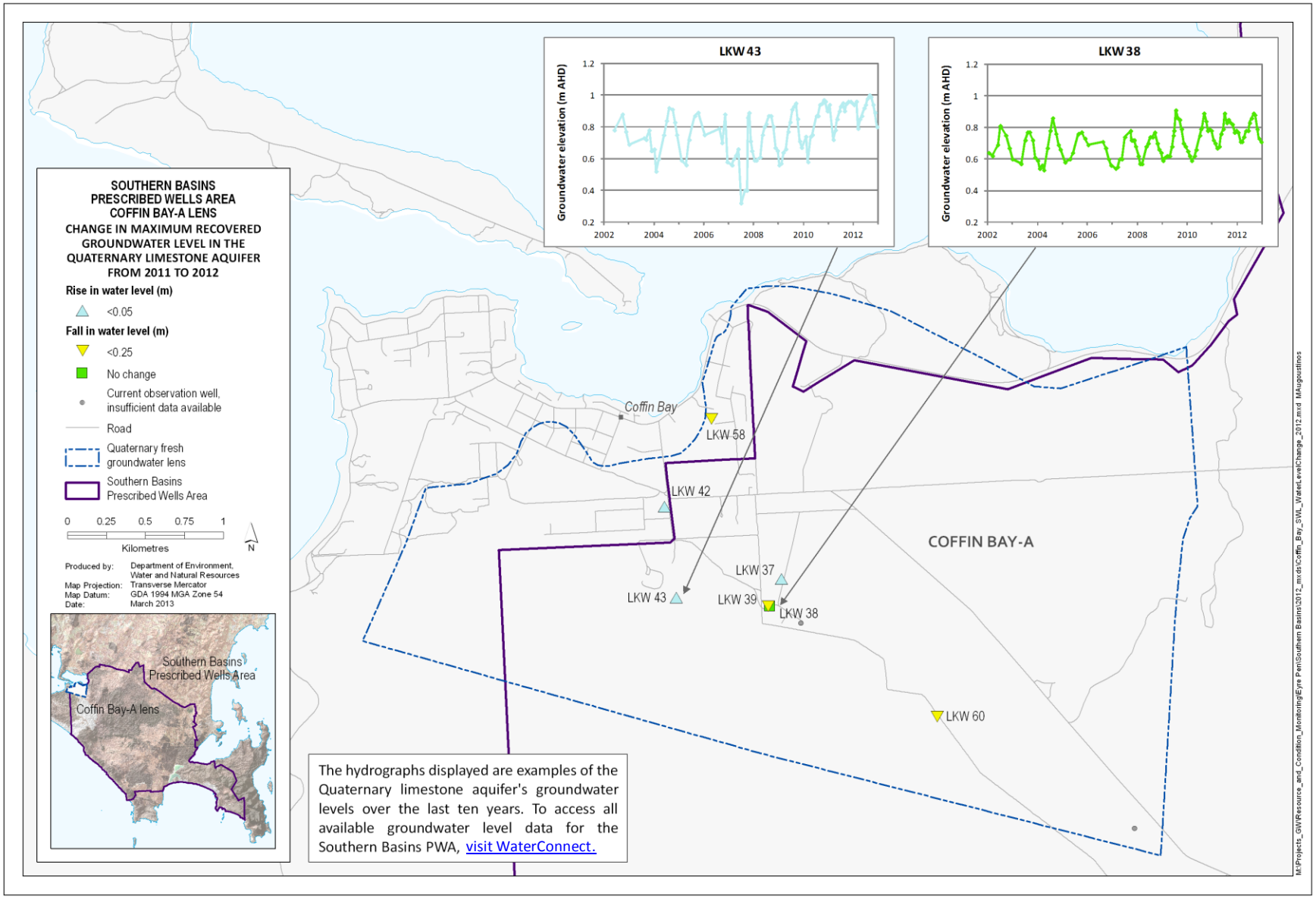



Figure 3. Overall changes in maximum recovered groundwater levels in the Coffin Bay-A lens of the Southern Basins Prescribed Wells Area from 2011 to 2012

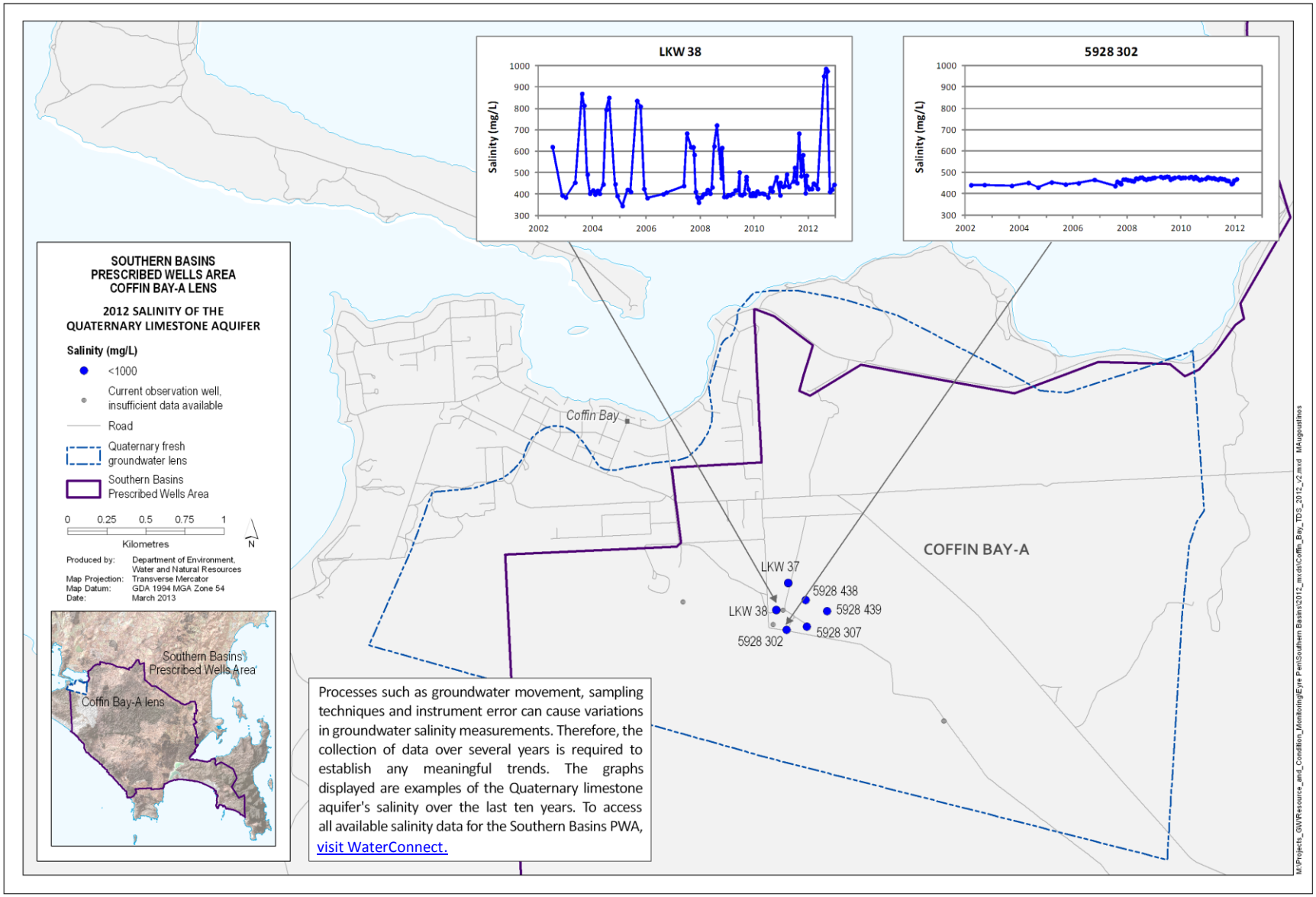



Figure 4. Groundwater salinity of the Coffin Bay-A lens in the Southern Basins Prescribed Wells Area for 2012