Eyre Peninsula Demand and Supply Statement

Annual Review 2014

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

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1 EXECUTIVE SUMMARY

The 2013–14 annual review of the demand-supply projections has indicated that based on current population growth and potential climate change impacts, demand for drinking quality water is not projected to exceed supply until 2025–26, one year later than the 2012–13 annual review suggested. Given the results from the current review, an Independent Planning Process is not considered to be required until 2020–21.

The preparation of annual reviews of the demand-supply projections for water on the Eyre Peninsula follows on from the Eyre Peninsula Demand and Supply Statement (the Statement), released in April 2011. The Statement indicated that under a worst-case scenario, demand for drinking quality water would outstrip supply in 2017-18. At the time it was anticipated that the Independent Planning Process would need to be initiated in 2012-13.

This is the fourth annual review following reviews of the Statement conducted for 2010-11, 2011-12, 2012-13 and released in April 2012, February 2013 and July 2014, respectively. The preparation of annual reviews for regional demand and supply statements is a requirement of *Water for Good*, South Australia's water security plan. The annual reviews also fulfil legislative requirements of the *Water Industry Act 2012*, which states that the Minister for Water and the River Murray will produce an annual report providing information about the demand and supply status of the various regions of the State.

The reviews incorporate the latest information on available water and water use, now and in the future. This includes assessment of water demand due to population growth and economic development as well as the impacts of climate change on water supply. The information is obtained from several sources including local government and state government agencies such as the Department of Environment, Water and Natural Resources (DEWNR), SA Water, the Department of Planning, Transport and Infrastructure (DPTI) and the Department of State Development. This information is compared to the projections developed in the original 2011 Statement and calculations are made to assess water available in the region into the future.

Eyre Peninsula's reliance on groundwater resources makes the region's water supply sensitive to rainfall and the related aquifer recharge rates. Last year's review reported a 446 megalitre (ML) increase in the Southern Basins Prescribed Wells Areas (PWA) allocation to SA Water for 2014-15. This large increase has been a primary factor that contributed to delaying the timing of the projected water shortfall for the region to 2024-25. The Southern Basins PWA allocation to SA Water for 2015-16 remains the same as the year before and the timing of the shortfall is therefore now projected to 2025-26.

The Regional Mining and Infrastructure Plan was released in June 2014 and updates the infrastructure needs for mining operations across South Australia (SA Government 2014a). The Plan projects future demand for freight transport, peak electricity and electricity consumption as well as water. Future projections for water demand have been updated using the water demand identified in the Plan. As mining companies are responsible for securing the water supply for their operations, such as from desalinated water or non-prescribed groundwater, it is not expected that mining will have a detrimental impact on the current mains water supply in the region.

During the 2013–14 annual review period, demand for drinking quality water in the Eyre Peninsula region was lower than the best and worst-case scenarios of low and high population growth outlined in the Statement. Mains water consumption for the Eyre Peninsula region was 15.58 gigalitres (GL), compared with projected demands of 19.2 GL in the best-case scenario and 19.4 GL in the worst-case scenario. This is based on metered data from SA Water and licensed water use data from DEWNR. Mains water consumption was around 230 ML higher than the previous year.

A 4,326 ML surplus of drinking quality water was recorded in the Eyre Peninsula region, compared with projected best-case and worst-case scenario surpluses of 1,187 ML and 952 ML respectively. If the quantities of drinking quality and non-drinking quality water (i.e. including recycled stormwater and wastewater and other non-prescribed water resources such as groundwater) are combined, there was a surplus of 7,711 ML compared with projected best-case and worst-case scenario surpluses of 3,508 ML and 3,248 ML respectively.

In keeping with the *Water Industry Act 2012*, the assumptions underlying the projections will be reviewed in 12 months' time. Should anything change, such as less water being available from the prescribed wells areas or increased demand from population growth or mining, the timing for the demand-supply projections and associated Independent Planning Process will be adjusted accordingly.

Table 1: Revised demand-supply projections

Scenario	**Projection 1: Drinking-quality water demand and supply only**	**Projection 2: All water sources and all human demands**
Actual Population Growth and Future Water Allocations	Demand is not projected to exceed supply until 2025-26	Demand is not projected to exceed supply prior to 2050

2 INTRODUCTION

A key priority for the South Australian Government is ensuring that all South Australians have sufficient water supplies for a sustainable lifestyle, economy and environment.

Under *Water for Good*, the State Government is required to ensure Regional Demand and Supply Statements are in place across the State in consultation with regional communities, building on existing plans and incorporating local knowledge. Developing such statements is one tool to enable the State Government to secure the State's water resources by taking stock of the resources available, the current and projected future demands on them, and the likely timing of any potential demand-supply imbalance.

The Eyre Peninsula Statement aims to provide a 40-year overview of water supply and demand in the Eyre Peninsula region by outlining the state of all water resources for drinking and non-drinking water, the major demands on these resources and likely timeframes for any possible future demand-supply imbalance.

The Statement will be used to plan for the timing and nature of future demand management or supply options. It will help ensure that long-term solutions are based on a thorough understanding of the state of local resources, the demand for them, and likely future pressures.

In the event that a Regional Demand and Supply Statement indicates a shortfall in supply it will trigger the State Government to initiate an Independent Planning Process five years prior to when demand for water is projected to exceed supply. This process will assess demand management or supply options to address the shortfall, and will include local community engagement.

The Independent Planning Process will include a cost-benefit analysis and recommendations will be made on how to address the shortfall in supply, including the possible role of Government, funding options and opportunities to engage the private sector in the delivery of the recommended approach.

Water for Good indicates that Regional Demand and Supply Statements will be analysed and reviewed annually as an integral part of an adaptive management framework.

The aim of this report is to review the assumptions behind the demand-supply projections in the Statement. This review will identify how we are tracking against previous projections, and indicate if the timing for the Independent Planning Process requires adjusting.

3 BACKGROUND

The original Demand and Supply Statement, released in April 2011, indicated that under a worst-case scenario, demand for drinking quality water was projected to exceed supply in 2017–18. As such, it was anticipated that an Independent Planning Process would need to be initiated in 2012–13.

The 2011 and 2012 annual reviews of the Statement incorporated new information about the impacts of climate change and population growth in the Eyre Peninsula region as well as future recharge rates for the Southern Basins PWA. The 2012 review brought the projected timing of the water shortfall to 2020-21. The 2013 review released in July 2014 indicated that the shortfall was not expected until 2024-25 and this was predominantly due to higher water allocations in the Southern Basins PWA in 2014-15 that have resulted from higher rainfall and aquifer recharge rates. The current review indicates that the shortfall is not expected until 2025-26 as the allocation for the Southern Basin PWA has remained unchanged for 2015-16 water year.

Table 2 below outlines the projected shortfalls for potable water determined at the time of developing the original Statement and at each annual review including this 2013-14 annual review. The table shows timing for worst-case scenarios only of high population and high emissions and lists the key drivers for changes in the projected timing of the water shortfalls.

Table 2: Drivers for the Eyre Peninsula region demand-supply projections

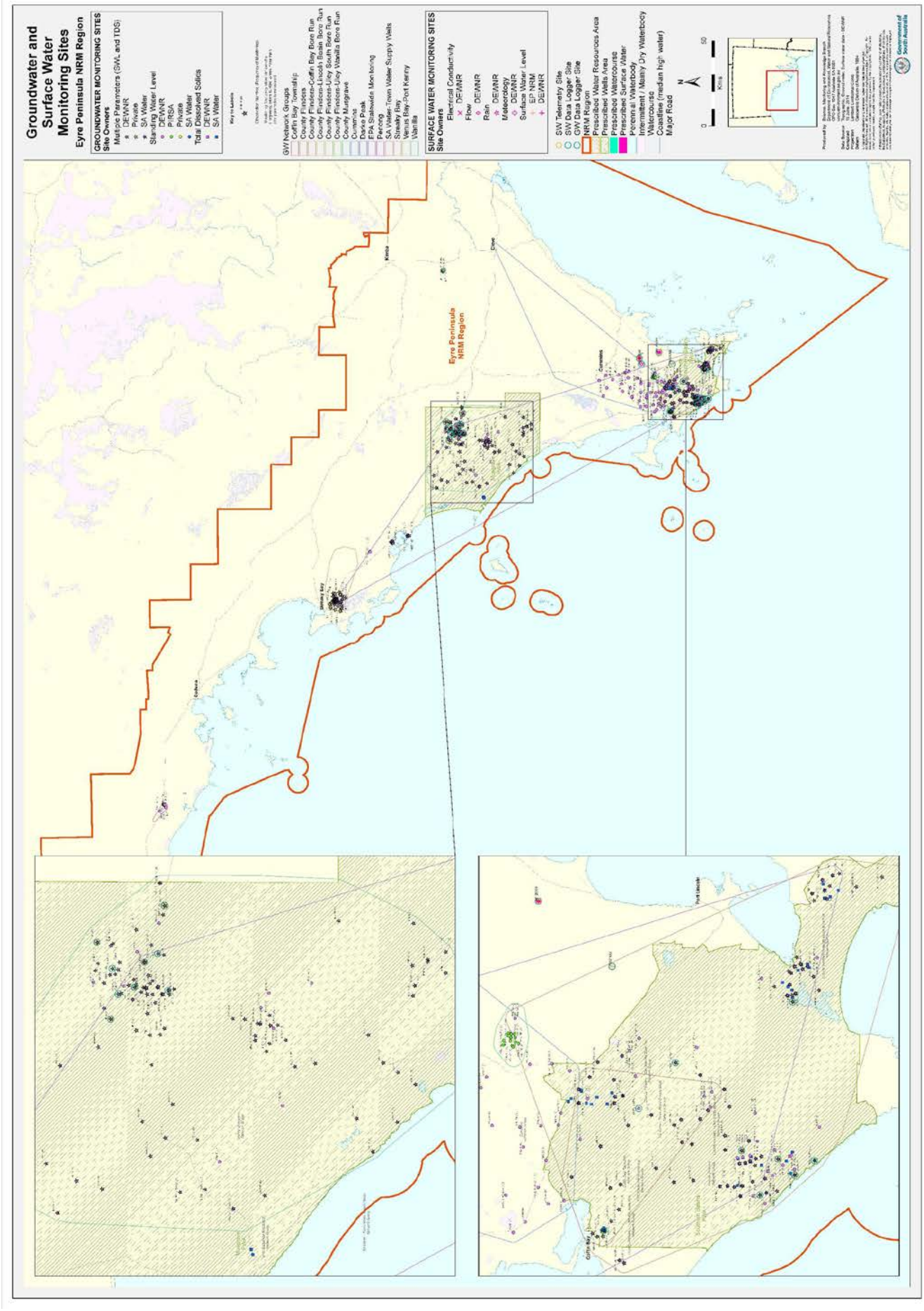
Document	**Time of projected shortfall for worst-case projection**	**Key drivers for change from original statement**
Original Statement 2009-10	2017-18	Not applicable
Annual Review 2010-11	2023-24	• Climate change on water resources impacts less severe • Actual population growth higher than low population projection but lower than high population projection • A small 73 ML increase in Southern Basins PWA allocation
Annual Review 2011-12	2020-21	• A large 417 ML decrease in Southern Basins PWA allocation • Population growth rate tracking with low population projection
Annual Review 2012-13	2024-25	• A large 445 ML increase in Southern Basins PWA allocation
Current Annual Review 2013-14	2025-26	• Allocations for Southern Basins PWA remain unchanged

It is important to note that the Water Allocation Plans for the Southern Basins and Musgrave PWAs require an annual assessment of recharge to the groundwater supplies which are used to determine water allocations for the subsequent water year. This adaptive management approach is unique to Water Allocation Plans for the Eyre Peninsula Region and recognises the high degree of responsiveness of the resources to annual rainfall patterns.

Allocations are based on an arithmetic expression of recharge area and calculated volume of recharge using observed changes in groundwater levels within the aquifers. A network of around 250 wells across the Southern Basins and Musgrave PWAs is used to monitor water levels and water quality. On-going monitoring ensures that this important groundwater resource is effectively managed for the benefit of the local community and the natural environment.

Figure 1 shows the location of the monitoring wells in the Southern Basins and Musgrave PWAs.

Figure 1: Monitoring network of wells in the Southern Basins and Musgrave PWAs.



4 ASSESSMENT OF DEMAND-SUPPLY PROJECTIONS

The Eyre Peninsula Statement developed demand-supply projections out to 2050 based on four prudently chosen scenarios – high and low population growth and climate change impact. They are intended to illustrate the possible water demand and supply levels in any given year, depending on a range of assumptions including population, climate change and the available supply from the Southern Basins and Musgrave Basin PWAs and River Murray supply. When released, the Statement projected that under a worst-case scenario of high population growth and climate change impact, demand for drinking quality water was projected to exceed supply in 2017-18. The 2013-14 annual review revised this projection to 2025-26.

4.1 2013–14 SUPPLY AND DEMAND

In winter 2013, rainfall was generally well above average across much of the state, apart from the far north. Winter rainfall started with above average rainfall across most of the State in June, this continued across the agricultural districts into July, with rainfall becoming largely restricted to agricultural districts in August.

Winter rainfall totals in the agricultural districts were widely above average, with rainfall totals ranging from around 60mm in the Riverland, 100 to 200mm in the Western Agricultural and Upper North districts and increasing to 200 to 300mm further south and ranging up to 500mm in the Mount Lofty Ranges.

The mean temperature (the average of the maximum and minimum temperatures) for South Australia as a whole in winter 2013 was 1.4°C warmer than average, the hottest winter for the state since 2009 and the second warmest winter for the State as a whole (BOM 2013).

Summer 2013–14 was warmer than average for Australia in terms of both maximum and minimum temperatures. Anomalies for area-averaged South Australian maximum, minimum and mean temperatures were +1.53°C, +1.18°C and +1.36°C, respectively. South Australia also received higher than average rainfall during this period (BOM 2014a).

In South Australia, both day and night temperatures were above average through autumn 2014 with temperatures more than 2°C above average across northern districts. Rainfall was above average across most of South Australia, with totals in excess of 200 per cent of the seasonal average at locations across northern agricultural and pastoral districts, mainly due to rain events in late March and the first half of April. Several sites had record their highest autumn daily rainfall totals from the early April rainfall event (BOM 2014b).

2014 was the second-warmest year on record for South Australia, with particularly warm conditions across the State during late autumn and spring. Annual rainfall was above average in most areas, predominantly owing to a very wet April and May, but spring was very dry (BOM 2015).

In general, the Lincoln Basin saw a small decline in groundwater levels when compared to highest annual groundwater elevation recorded in 2013. The maximum recovered groundwater levels in 2014 continue the longer-term stable rising trends observed from 2009-10. Observations in the Uley Wanilla lens generally show a rise in the maximum recovered groundwater level. Similarly, for the Uley South lens the majority of wells recorded a rise in the groundwater level. Following a significant rise in groundwater levels during 2013 as a result of above-average rainfall, monitoring data for Coffin Bay-A lens showed a median decline of 0.19 m possibly due to less recharge occurring because of less rainfall received than in 2013.

The above-average, high-intensity rainfall recorded in the first half of 2014 has resulted in a significant increase in groundwater levels across the Polda lens with a median rise of 0.25 m. The high-intensity rainfall also resulted in a median 0.09 m rise in groundwater levels across the Bramfield lens.

During 2013–14, demand for drinking quality water in the Eyre Peninsula region was lower than the best and worst-case scenarios of low and high population growth in the Statement. Mains water consumption for the Eyre Peninsula region was 15.6 GL, compared with projected demands of 19.2 GL in the best-case scenario and 19.4 GL in the worst-case scenario.

4.2 2013–14 ACTUAL AND PROJECTED AVAILABLE SUPPLY

Significantly lower actual demand from the mains water supply compared to projections in the Statement resulted in a surplus in the available supply for the Eyre Peninsula region over 2013–14.

A 4,326 ML surplus of drinking quality water was recorded in the Eyre Peninsula region, compared with originally projected best-case and worst-case scenario surplus of 1,187 ML and 952 ML respectively (see Figure 2).

There was a surplus of 8,248 ML of all drinking and non-drinking water in the region including recycled water, stormwater and other prescribed water resources such as groundwater (see Figure 2). The Statement's original projections for the best-case and worst-case scenarios in 2013-14 were surpluses of 3,508 ML and 3,248 ML, respectively.

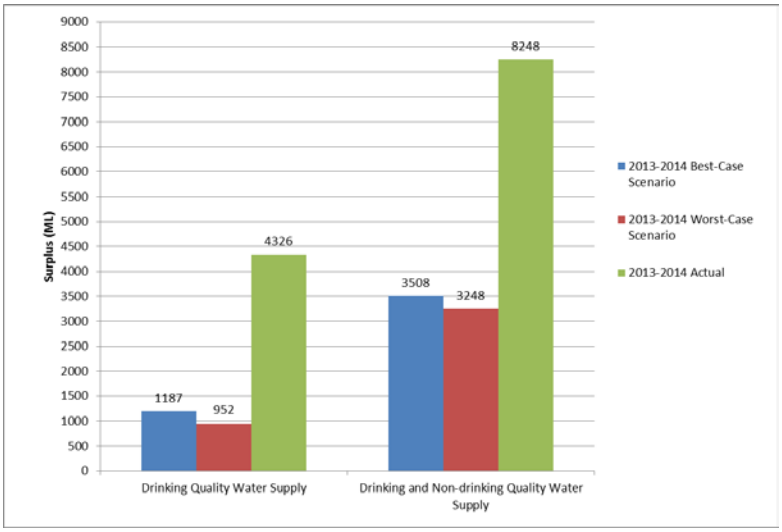
The original Demand and Supply Statement for Eyre Peninsula projected that demand for potable water would outstrip supply in 2017-18 and 2022-23 for worst-case and best-case scenarios, respectively. This baseline projection shows that the water surplus will continue to decrease with each annual review eventually reaching zero when demand is equal to supply at the identified times. The surplus projected in the original Statement for 2013-14 is shown in Figure 2 as the best-case (blue) and worst-case (red) scenarios.

As new information becomes available the original projections are reviewed and amended to indicate new timeframes that identify future shortfalls. For example, information about climate change reported in the 2010-11 annual review indicates that the impacts of climate change on water resources will be lower than the best-case scenario outlined in the original Statement. Population growth is also trending closer to the low population projection. The impact of this information is that water shortfalls are anticipated later than projected in the original Statement.

The dependence of groundwater recharge on rainfall and the resulting variability in water allocations for the groundwater basins appears to have a significant influence on the timing of anticipated water shortfalls. The allocation for the Southern Basins PWA in 2015-16 has remained the same as the allocation 2014-15. This has resulted in the projected water shortfall to change by one year to 2025-26.

For all drinking and non-drinking water, projections indicate that sufficient water will be available to meet demand until at least 2050.

Figure 2: Eyre Peninsula 2013–14 available supply compared to projections



4.3 REVIEW OF ASSUMPTIONS

During development of the Statement a number of factors were identified that could affect the demand-supply balance for the Eyre Peninsula region and lead to a surplus or deficit. To better understand future water supply and demand, it is important to recognise the influences. The table below illustrates the key drivers for the demand and supply projections.

Table 3: Drivers for the Eyre Peninsula region demand-supply projections

KEY SUPPLY DRIVERS	KEY DEMAND DRIVERS
River Murray supply Southern Basins Prescribed Wells Area supply Musgrave Prescribed Wells Area supply Alternative supplies Climate change Mining supply	Total demand for water Population growth Mining Stock

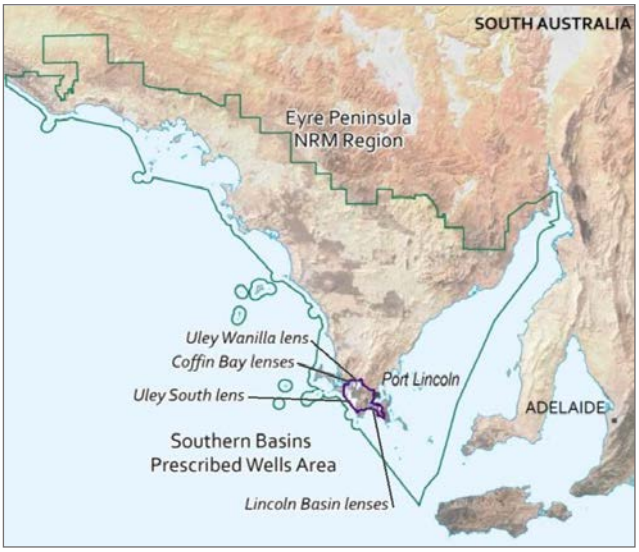
4.4 SUPPLY DRIVERS

River Murray supply

Under normal flow and operating conditions, South Australia has a minimum entitlement of 1,850 GL per year, of which SA Water has a licence for 50 GL per year for country town water supply purposes. In extreme circumstances, including drought or periods of low flow conditions, special water-sharing arrangements are triggered to ensure South Australia has access to water for Critical Human Needs.

In 2013–14 SA Water supplied approximately 11 GL of River Murray water (including losses) to the Eyre Peninsula Region, the majority of which is used in Whyalla.

Southern Basins Prescribed Wells Area supply



The condition of the groundwater resources in the Southern Basins as well as the Musgrave PWAs is highly dependent on recharge from rainfall, with trends in groundwater levels and salinity primarily climate driven: below-average rainfall results in a reduction in recharge to the aquifers. Below-average summer rainfall can also result in increasing irrigation extractions, and these two elements can cause the groundwater levels to fall and salinity to increase. Conversely, increases in rainfall results in increases in recharge, decreases in irrigation extractions and groundwater levels may rise and salinity stabilise or decline. Historical rainfall data have indicated that trends of above or below-average rainfall can last for up to 25 years, and that greater recharge responses have been observed when rainfall occurs in high-intensity events (DEWNR 2014a and 2014e).

For the 2014 calendar year DEWNR has analysed monitoring well data to determine the status of four lenses in the Southern Basins PWA including Lincoln Basin, Uley Wanilla, Uley South and Coffin Bay-A.

Lincoln Basin Lenses

Metered extractions from the Lincoln Basin (lenses A, B and C) totalled 1.6 ML in 2013–14, a 55 per cent decrease from the previous water-use year. This volume of extraction equates to 0.3 per cent of the total allocation limit of 625 ML for lenses A, B and C of the Lincoln Basin and is 0.03 per cent of the total licensed extractions in the whole PWA (DEWNR 2014a).

In 2014, despite very limited groundwater extractions, 25 of 27 monitoring wells recorded a small decline in the maximum recovered groundwater level (the highest annual groundwater elevation, usually recorded at the end of winter) when compared with 2013 water level data. The largest declines occurred in the area north of lens B and ranged between 0.03 to 0.17 m, with a median decline of 0.06 m. One well recorded no change and one well recorded a 0.36 m rise in the maximum level. The declines may be due to less recharge occurring because of less rainfall received compared with 2013. This also follows a significant rise in groundwater levels during 2013 as a result of the above-average rainfall and a significant reduction in groundwater extraction in 2012–13. The maximum recovered groundwater levels in 2014 continue the longer-term stable or rising trends observed since 2009-10 (DEWNR 2014a).

Uley Wanilla Lens

Extractions from Uley Wanilla lens have decreased steadily since 1993 in response to falling groundwater levels. Metered extractions from the Uley Wanilla lens totalled 86.7 ML in 2013–14, an increase of 81.5 per cent from the previous water-use year and a 32 per cent increase over the 2011–12 water-use year. The significant increase in groundwater extractions observed during the 2013–14 water-use year was due to an intentional effort to minimise groundwater extractions in 2012–13 in order to observe system dynamics with a reduced demand. The 2013–14 extraction volume equates to 47 per cent of the total 2013–14 allocation of 184 ML for the Uley Wanilla lens and represents 1.8 per cent of the total licensed extractions from the Southern Basins PWA.

In 2014, there were 14 observation wells with sufficient data to allow a comparison of changes in maximum recovered water levels with levels recorded in 2013. Eleven wells recorded a rise in the maximum recovered groundwater level (the highest recorded groundwater level over the year, usually following winter rainfall) of up to 0.89 m, with the most significant rises occurring in the northern-part of the lens. Three observation wells recorded a decline in maximum recovered water level of up to 0.13 m. Overall, there was a median 0.12 m rise in groundwater levels between 2013 and 2014 despite the significant increase in extractions during the water-year. This appears to be the result of the above-average rainfall observed in the early part of 2014 contributing to groundwater recharge (DEWNR 14b).

Uley South Lens

Metered extractions from the Uley South lens totalled 4,742 ML in 2013–14, a 12 per cent decrease from the previous water-use year. This volume of extraction equates to 69 per cent of the total 2014 allocation of 6,887 ML for the Uley South lens and represents 96 per cent of the total licensed extractions from the Quaternary limestone aquifer in the Southern Basins PWA.

Monitoring records reveal a long-term decline of nearly two metres in groundwater levels of the Uley South lens after 1992, which coincides with a trend of below-average rainfall recorded at the Westmere rainfall station. Above-average rainfall since 2009 has led to a rise in groundwater levels throughout the lens, although current groundwater levels remain lower than those recorded prior to 1992.

In 2014, of the 50 observation wells with water level data available for comparison with 2013, 58 per cent recorded a rise in the maximum recovered groundwater level (the highest recorded groundwater level over the year, usually following winter rainfall) of up to 0.69 m, with a median increase of 0.23 m, between 2013 and 2014. A decline in groundwater levels of up to 0.62 m, with a median decrease of 0.06 m, was recorded in 32 per cent of wells, while negligible change was recorded at the remaining 10 per cent of wells, where the change in maximum recovered groundwater levels between 2013 and 2014 was less than 0.02 m. Generally, rises in groundwater level were recorded in the centre of the Uley South lens, roughly corresponding to less vegetated areas, while declines were recorded to the west, north and south of this central area (DEWNR 2014c).

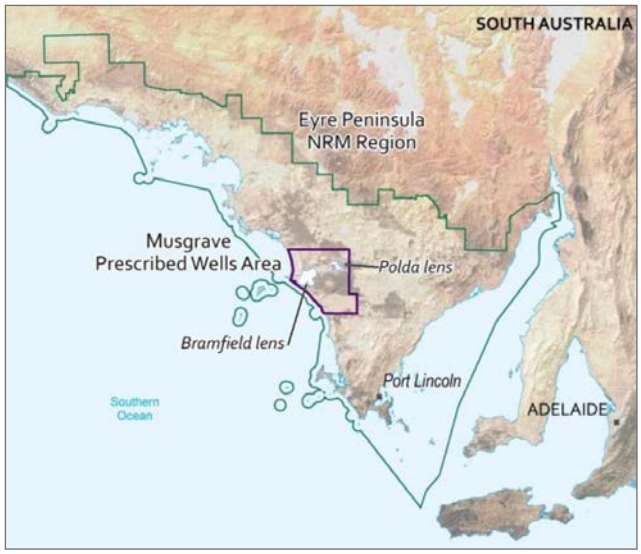
Coffin Bay-A Lens

Metered extractions from the Coffin Bay-A lens totalled 98 ML in 2013–14, a 9 per cent decrease from the previous water-use year. This volume of extraction equates to 88 per cent of the total 2013–14 allocation limit of 112 ML for the Coffin Bay-A lens and is 2 per cent of the total licensed extractions from the Quaternary limestone aquifer in the whole PWA.

In 2014, all eight observation wells with monitoring data showed a decline in the maximum recovered groundwater level (the highest recorded groundwater level over the year, usually following winter rainfall) ranging up to 0.45 m, with a median decline of 0.19 m. This may be due to less recharge occurring because of less rainfall received compared with 2013. This also follows a significant rise in groundwater levels during 2013 as a result of above-average rainfall. Despite the overall decline, the maximum recovered groundwater levels in 2014 continue the longer-term stable or rising trends observed since 2009–10 (DEWNR 2014d).

The total available licensed allocation for the Southern Basins PWA in 2013-14 was 8.2 GL. Allocations have increased to 8.6 GL in 2014-15 and have remained at 8.6 GL in 2015-16.

Musgrave Prescribed Wells Area supply



Polda Lens

The Musgrave PWA is highly dependent on recharge from rainfall. After a long period of declining groundwater levels (2 to 3 m over 20 years) and below-average rainfall in the Musgrave PWA, good winter and spring rainfall in both 2009 and 2010 had increased recharge and led to watertable rises of up to 1.7 m in Polda lens and up to 2.1 m in other minor lenses.

The Polda lens has provided groundwater for the Eyre Peninsula reticulated water supply system since 1963. Prior to 2000, this contribution averaged about 15 per cent of the total supply. The Polda lens is no longer used for reticulated water supply due to continued low effective recharge and increasing groundwater salinity.

A Notice of Prohibition was enforced in November 2008 by the Minister of Environment and Conservation and has been extended until January 2017 unless varied or revoked. The Notice of Prohibition does not allow SA Water to extract groundwater for public water supply purposes and restricts extraction by other licence holders. Stock and domestic use is allowed under the Notice of Prohibition. Metered extractions from the Polda lens in 2013–14 totalled 613 kilolitres (kL), the same as the previous water-use year. This volume of extraction equates to 32 per cent of the allocation volume allowed under the Notice of Prohibition and accounts for less than 1 per cent of the total licensed extractions within the Musgrave PWA for 2013-14.

The above-average, high-intensity rainfall recorded in the first half of 2014 has resulted in a significant increase in groundwater levels across the Polda lens—all 35 wells with data which could be compared with 2013 showed an increase in groundwater level. Groundwater level increases ranged between 0.06 and 0.6 m, with a median rise of 0.25 m (DEWNR 2014e).

Bramfield Lens

The Bramfield lens has provided groundwater for the town water supply of Elliston since 1974. Metered extractions from the Bramfield lens in the 2013–14 water-use year totalled 71 ML, a 6 per cent increase from the previous water-use year. This volume of extraction equates to 7.5 per cent of the total allocation limit of 1,201 ML for the Bramfield lens and accounts for 99 per cent of the total licensed extractions within the Musgrave PWA.

Observation wells monitoring the Bramfield lens show a steady decline in groundwater levels of 2–3 m corresponding to an extended period of below-average rainfall between the 1980s–2008. Above-average rainfall in 2009 and 2010 resulted in a significant rise in water levels, particularly in the south of the lens. Water levels have fluctuated since 2010 in response to seasonal rainfall.

In 2014, the above-average rainfall in the first half of the year led to groundwater level rises of 0.07– 0.72 m, with a median increase of 0.14 m, in four of the six observation wells located in the north-east of the Bramfield lens area. Groundwater level declines of 0.03 and 0.48 m were observed in two wells in the south of the lens. Overall, there was a median 0.09 m rise in groundwater levels across the lens (DEWNR 2014f).

For the Musgrave PWA the total available licensed allocation in 2013–14 was approximately 2,248 ML. This has remained the same in both 2014-15 and 2015-16.

Alternative supplies

The combined supply of wastewater from SA Water's Wastewater Treatment Plants and Local Government's Community Wastewater Management Schemes amounted to 2,521 ML in 2013-14. This compared to the projected volume of 2,600 ML provided in the original statement for this year. The estimated actual wastewater use in 2013-14 was 882 ML compared to the projected demand of 1,060 ML.

Stormwater capture and reuse is estimated to be lower than projected in the original statement, however this is likely due to the difficulties in obtaining data including limited capacity to measure and estimate stormwater capture and reuse.

Climate change

The 2012 Department for Water report on the Impacts of Climate Change on Water Resources in the Eyre Peninsula Natural Resources Management (NRM) Region continues to provide the most relevant information on this issue (Green et al., 2012).

Mining supply

Current Government policy as articulated through *Water for Good* is that mining companies must supply their own water, within the sustainable framework of natural resources management planning and regional demand and supply plans.

This does not preclude a company entering a commercial arrangement with SA Water for supply where SA Water has capacity and where it would not impact on drinking water supplies to the community. SA Water's maximum extraction is set through annual allocations under its water licence.

The information regarding supply of water for mining purposes in the demand-supply projections in the original Eyre Peninsula Demand and Supply Statement is sourced from the Resources and Energy Sector Infrastructure Council's (RESIC) Infrastructure Demand Study 2009.

The South Australian Regional Mining and Infrastructure Plan (RMIP) was released by the South Australian Government in June 2014 (Government of South Australia 2014). The plan updates future water demand projections for mining projects across the State. The 2013-14 annual review of the Eyre Peninsula Demand and Supply Statement uses the new projections to update the water demand and supply status in the region. The review assumes that the majority of the demand will be satisfied by water supply developed by the proponents of mining projects. This will typically be achieved through desalination plants and in part through access to non-prescribed groundwater resources and potentially the SA Water network.

The Contractor's Report (Deloitte 2014), which accompanies the RMIP, outlines six water projects in response to water issues identified in the Eyre and Western region. Four of these projects outline potential desalination options which are either stand alone on-coast or on-site. There is also a possibility of integrating desalinated water into the SA Water network. One project proposes to undertake a high level overview analysis of the potential for further groundwater use in the Eyre Peninsula. Another investigates greater utilisation of existing mains water system in periods of low demand by introducing potable water storages at critical points in the water supply system.

4.5 DEMAND DRIVERS

Total demand for water

During the reporting period, demand for drinking quality water in the Eyre Peninsula region was approximately 3.7 GL lower than the Statement's projections. The combined demand for drinking and non-drinking quality water was approximately 2.4 GL lower than the Statement's projections.

Population growth

DPTI indicates that the most likely future population growth rates, when averaged out to 2050, are tracking in line with the low population growth scenario used in the Statement.

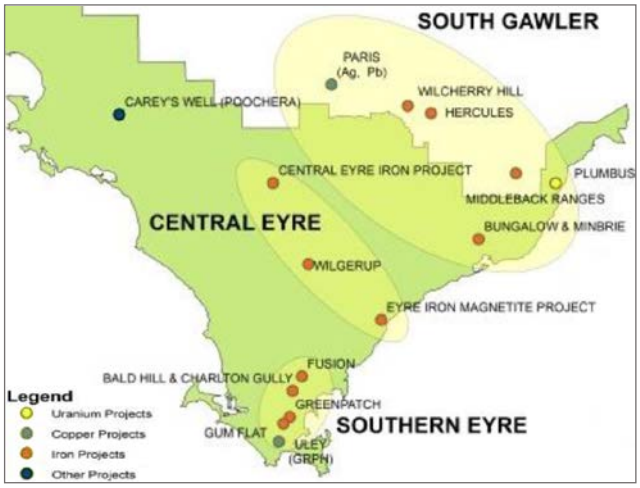
Mining demand

The information regarding demand of water for mining purposes in the demand-supply projections in the original Eyre Peninsula Demand and Supply Statement is sourced from the RESIC Infrastructure Demand Study 2009 as well as advice from the then Primary Industries and Resources South Australia.

The RMIP released in June 2014 updates the infrastructure needs for mining operations across South Australia (SA Government 2014a). RMIP projects future demand for freight transport, peak electricity, electricity consumption as well as water. The accompanying Contractor's Report (Deloitte 2014) outlines infrastructure demand forecasts for the Eyre and Western Region based on three economic growth scenarios of low, medium and high over three periods 2013-17, 2018-22 and 2023-32.

The likelihood of individual mines proceeding to production was modelled with reference to:

- Forecasts of commodity prices
- Estimates of likely mine operating cost
- Estimated mine and direct procured (by mine proponent) infrastructure capital cost
- Estimated cost of feasible mine to port transport solutions
- Allowance for minimum market benchmark return on invested capital.



Mining industry data collected as part of the project led to the development of mining clusters which grouped mines likely to have common infrastructure needs. The clusters were developed by grouping mines in close proximity to each other with relatively homogeneous mineral production profiles (Deloitte 2014).

For the Eyre and Western Region the clusters include South Gawler, Central Eyre, Southern Eyre and part of Western Sands which straddles the Eyre Peninsula and Alinytjara Wilurara NRM Regions. While the majority of mines in the South Gawler cluster are located just outside of the Eyre Peninsula NRM Region they have been included in the analysis as they are likely to depend on water produced within the region.

Table 4 outlines projected mining water demands for the low, medium and high economic growth scenarios.

Table 4: Projected mining water demand for the Eyre Peninsula region (ML per annum)

	Scenario	2013-2017	2018-2022	2023-2032
South Gawler	Low	3,900	3,900	3,900
	Medium	3,900	7,500	9,900
	High	5,181	8,416	9,927
Central Eyre	Low	0	0	0
	Medium	48	39,052	52,007
	High	576	47,188	58,007
Southern Eyre	Low	0	0	0
	Medium	144	3,768	3,349
	High	144	5,436	16,856
Western Sands	Low	0	0	0
	Medium	176	70	0
	High	1,992	1,533	15

As discussed in the supply drivers, it is State Government policy that securing water for mining activities is the responsibility of the company. The growth in demand from the mining sector is not expected to have a detrimental impact on the current mains water supply in the region as mining companies suggest they will supply the water for their operations from desalinated seawater or non-prescribed groundwater resources.

Stock

Based on advice from the then Primary Industries and Resources South Australia, the Statement's projections assume that stock demand will increase by 1.5 per cent on the 2009–10 level for 10 years and then remain constant. Current advice from Primary Industries and Regions South Australia is that the Statement's projections remain valid.

5 CONCLUSION

The annual review of the assumptions underlying the Statement's demand-supply projections provides for the opportunity to revise the timing of when an Independent Planning Process is required.

The 2013-14 annual review of the Eyre Peninsula Demand and Supply Statement indicates that there have been few changes to demand and supply drivers when compared to the 2012-13 annual review. Significantly, the allocations for the Southern Basins and Musgrave PWAs remain the same. Population growth continues to track in line with the low population scenario. Stock numbers have also remained relatively stable.

The South Australia Regional Mining and Infrastructure Plan has provided updated projections for infrastructure demands from the mining sector including future demands for water in the Eyre and Western Region. Given existing Government policy requires that this demand is met by mining project proponents the growth in demand from the mining sector is not expected to have a detrimental impact on drinking quality water supplies.

In light of this, the demand-supply projections have been revised. As in the Statement, two different demand-supply projections are considered:

- Projection 1: Drinking-quality water demand and supply only
- Projection 2: All water sources and all human demands

The first projection refers to water supply and demand of high-quality, treated water from the SA Water mains distribution network. The second refers to drinking quality water and non-drinking quality water supplies; and demand for water for all human and other purposes such as stock and domestic use, irrigation, industrial, commercial and mining.

Table 5 outlines the impact on demand-supply for both projections based on current population growth and the new information described previously. The impacts of climate change have been retained from the demand-supply projections developed in 2011-12. As in the 2011-12 projections, there is no difference between the projected high and low climate change impact out to 2050.

Table 5: Revised demand-supply projections

Scenario	**Projection 1: Drinking-quality water demand and supply only**	**Projection 2: All water sources and all human demands**
Actual population growth	Demand is not projected to exceed supply until 2025-2026	Demand is not projected to exceed supply prior to 2050

Upon review of the demand-supply projections, based on current population growth, demand for drinking quality water is not projected to exceed supply until 2025–26. Therefore an Independent Planning Process will not be required until 2020–21.

However, in keeping with the *Water Industry Act 2012*, the assumptions underlying the projections will be reviewed in 12 months' time. Should anything change, such as less water available from the prescribed wells areas or increased demand from population growth or mining, the timing for the demand-supply projections and associated Independent Planning Process will be adjusted accordingly.

6 BIBLIOGRAPHY

Bureau of Meteorology 2013, South Australia in winter 2013: A warm and wet winter for most - Seasonal Climate Summary for South Australia, Product Code IDCKGC13R0, Australian Government, Canberra.

Bureau of Meteorology 2014a, Australia in summer 2013-14 - Seasonal Climate Summary for South Australia, Product Code IDCKGC1A00, Australian Government, Canberra.

Bureau of Meteorology 2014b, South Australia in autumn 2013: A warm and wet season across the state - Seasonal Climate Summary for South Australia, Product Code IDCKGC23R0, Australian Government, Canberra.

Bureau of Meteorology 2015, Annual Climate Summary for South Australia, Product code IDCKGC53R0, Australian Government, Canberra.

Deloitte 2014, Regional Mining and Infrastructure Planning project - Eyre and Western Region, Contractor's Report - November 2014, Prepared for the South Australian Department of Planning, Transport and Infrastructure and the Commonwealth Department of Infrastructure and Regional Development, Deloitte.

Department of Environment, Water and Natural Resources 2014a, Southern Basins PWA Lincoln Basin 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Department of Environment, Water and Natural Resources 2014b, Southern Basins PWA Uley Wanilla lens 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Department of Environment, Water and Natural Resources 2014c, Southern Basins PWA Uley South lens 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Department of Environment, Water and Natural Resources 2014d, Southern Basins PWA Coffin Bay-A lens 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Department of Environment, Water and Natural Resources 2014e, Musgrave PWA Polda lens 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Department of Environment, Water and Natural Resources 2014f, Musgrave PWA Bramfield lens 2014 Groundwater level and salinity status report, Government of South Australia, Adelaide.

Green, G, Gibbs, M, Alcoe, D, and Wood, C, 2012, Impacts of Climate Change on Water Resources, Phase 3 Volume 2: Eyre Peninsula Natural Resources Management Region, DFW Technical Report 2011/04, Government of South Australia, through Department for Water, Adelaide.

Government of South Australia 2014, South Australian Regional Mining and Infrastructure Plan, June 2014, Government of South Australia, Adelaide.

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Department of Environment,
Water and Natural Resources