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EYRE PENINSULA DEMAND AND SUPPLY STATEMENT ANNUAL REVIEW 2011

DEPARTMENT FOR WATER

Government of South Australia
Department for Water

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DEPARTMENT FOR WATER

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EXECUTIVE SUMMARY

The *Eyre Peninsula Demand and Supply Statement* (Statement), released in April 2011, indicated that under a worst-case scenario, demand for drinking-quality water was projected to exceed supply in 2017-2018. As such, it was anticipated that an Independent Planning Process would be required to be initiated in 2012-2013.

Water for Good outlines that Regional Demand and Supply Statements will be annually reviewed. This commitment is further enhanced through the Water Industry legislation, 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 annual review for the Eyre Peninsula Statement is based on the best available information, provided by a range of organisations including, but not limited to, Local Government, the Resources and Energy Sector Infrastructure Council, the Australian Bureau of Statistics, the Department for Water, SA Water, the Department of Planning, Transport and Infrastructure and the Department for Manufacturing, Innovation, Trade, Resources and Energy.

During the 2010-2011 annual review period, demand for drinking quality water in the Eyre Peninsula region was lower than the best and worst-case scenarios of high and low population growth and climate change impact outlined in the Statement. Mains water consumption for the Eyre Peninsula region was 16.2 GL compared with projected demands of 19.1 GL in the best-case scenario and 19.2 GL in the worst-case scenario. This is based on metered data from SA Water and licensed water use data from the Department for Water.

A 2040 ML surplus of drinking quality water was recorded in the Eyre Peninsula region, compared with projected best-case and worst-case scenario surpluses of 951 ML and 904 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 5311 ML compared with projected best-case and worst-case scenario surpluses of 4497 ML and 4445 ML, respectively.

The key factors that have led to the updated demand-supply projections include:

- A new report (Green *et al*., 2012) shows that the impact of climate change on the Southern Basins and Musgrave Prescribed Wells Areas is now projected not to be as severe as the previous best available information suggested (Eyre Peninsula Natural Resources Management Board (EP NRM Board), 2009);
- Total licensed allocations from the Southern Basins and Musgrave Prescribed Wells Areas will increase in 2012-2013 based on recharge to the aquifers;
- Advice from the Department of Planning, Transport and Infrastructure, derived from Australian Bureau of Statistics (ABS) 2006 population census data and the post 2006 Estimated Residential Populations data, that suggests that the population growth rates out to 2050 should be revised to a lower rate; and

- Demand for water from the mining sector is expected to be higher, however, the supply of water for the mining sector from private desalinated seawater supplies is also likely to be higher and therefore counteract the demand.

Upon review of the demand-supply projections, under a worst-case scenario of high population growth, demand for drinking quality water is not projected to exceed supply until 2023-2024. Given the results from the review, an Independent Planning Process will not be required until 2018-2019.

However, in keeping with the Water Industry legislation, the assumptions underlying the projections will be reviewed in twelve months time and 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**
High population growth	Demand is projected to exceed supply in 2023-2024	Demand is not projected to exceed supply prior to 2050
Low population growth	Demand is projected to exceed supply in 2025-2026	Demand is not projected to exceed supply prior to 2050

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.

Water supply to all South Australian regions is a key priority for the State Government. 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 and condition 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. The Statement 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.

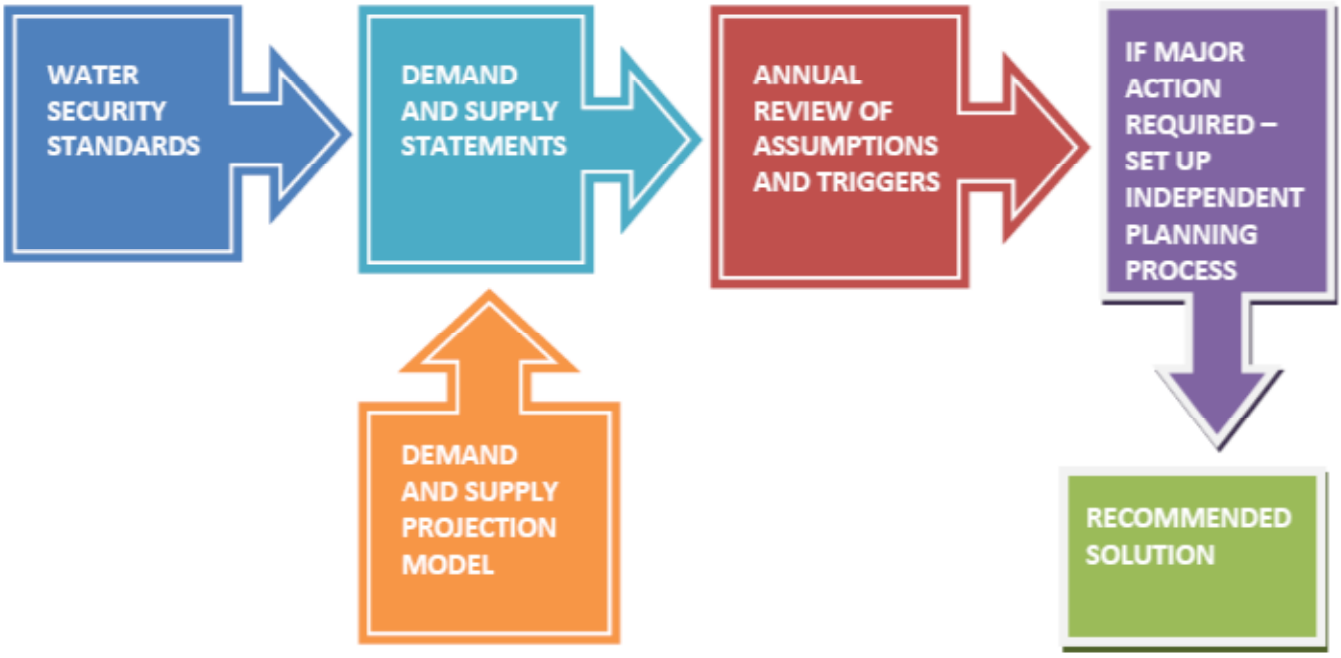
In the event that a Regional Demand and Supply Statement indicates a shortfall in supply it will trigger the State Government to initiate an Independent Planning Process five years prior to when demand for water is projected to exceed supply. This process will assess demand management or supply options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

The Statement, released in April 2011, indicated that under a worst-case scenario demand for drinking-quality water was projected to exceed supply in 2017-2018. As such, it was anticipated that an Independent Planning Process would be required to be initiated in 2012-2013.

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 (see figure 1).

Figure 1: 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 as per the projections, and indicate if the timing for the Independent Planning Process requires adjusting.

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, the available supply from the Southern Basins and Musgrave Basin Prescribed Wells Areas, River Murray supply, and the impacts of mitigation measures. 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 2017-2018.

2010-2011 SUPPLY AND DEMAND

The 2010 calendar year was Australia's second wettest year on record since national rainfall records commenced in 1900 (Bureau of Meteorology (BOM), 2011). It was also the third wettest year on record for South Australia, with the Murray-Darling Basin experiencing its wettest year on record. This ended a sequence of years with below average rainfall starting in 2001, and led to a dramatic recovery in water storages across the Basin (BOM, 2011).

After several decades of declining groundwater levels in the Southern Basins and Musgrave Prescribed Wells Areas (PWA), above average rainfall in 2009-2010 and continuing good rainfall into 2010-2011 has led to increased recharge and water table rises of up to 0.4m in these PWA (Department for Water (DFW), 2011a and DFW, 2011b). In some areas the water levels in 2009-2010 were the highest recorded for the previous ten years (DFW, 2011a and DFW, 2011b).

During the 2010-2011 reporting period, demand for drinking quality water in the Eyre Peninsula region was lower than the best and worst-case scenarios of high and low population growth and climate change impact in the Statement. Based on metered data from SA Water and licensed water use data from the DFW, mains water consumption for the Eyre Peninsula region was 16.2 GL compared with projected demands of 19.1 GL in the best-case scenario and 19.2 GL in the worst-case scenario.

Although water restrictions were removed across the Eyre Peninsula in April 2011, and replaced with Water Wise Measures, the demand-supply projections in the Statement were developed assuming there were no restrictions. As such it is not expected that there will be any significant change in demand as a result of lifting the restrictions from what was projected.

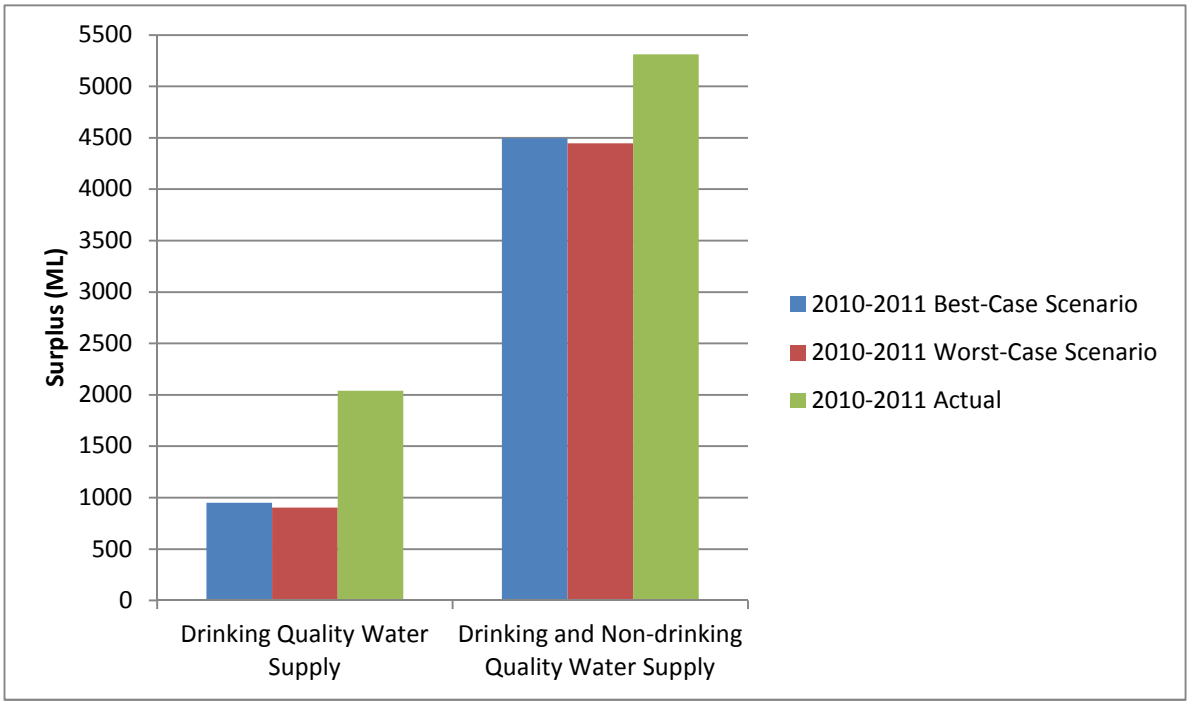
2010-2011 ACTUAL AND PROJECTED AVAILABLE SUPPLY

Significantly lower demand from the mains water supply as opposed to the projections in the Statement resulted in a surplus in available supply for the Eyre Peninsula region during the review period. There was also less water supplied from the River Murray than projected, however this reduction in supply was outweighed by the decrease in demand.

A 2040 ML surplus of drinking quality water was recorded in the Eyre Peninsula region, compared with projected best-case and worst-case scenario surpluses of 951 ML and 904 ML, respectively (see Figure 2, left). 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 5311 ML (see Figure 2, right). The projections for the best-case and worst-case scenarios were for surpluses of 4497 ML and 4445 ML, respectively.

Figure 2: Eyre Peninsula 2010-2011 available supply compared to projections



REVIEW OF ASSUMPTIONS

During development of the *Eyre Peninsula Demand and Supply 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 the future water supply and the demands it will face, it is important to recognise the influences. The table below illustrates the key drivers for the demand and supply projections.

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

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

Supply drivers

River Murray supply

In normal circumstances, South Australia has a minimum entitlement of 1850 GL, of which SA Water has a licence for 50 GL per year for country town water supply purposes. In extreme circumstances, special water-sharing arrangements are triggered to ensure South Australia has access to water for Critical Human Needs.

In 2010-2011, SA Water supplied approximately 9.3 GL of River Murray water to the Eyre Peninsula Region (the Statement assumed a maximum supply capacity of 11.2 GL), the majority of which is used in Whyalla. Demand for water in the region in 2010-2011 did not require that SA Water utilise the full system capacity.

Southern Basins Prescribed Wells Area supply

The above average rainfall in 2009-2010 and continuing good rainfall into 2010-2011 led to increased recharge into the aquifers of the Southern Basins Prescribed Wells Area and as a result there were water table rises of up to 0.4m in some of the aquifers of the Prescribed Wells Area (DFW, 2011). In some areas the water levels in 2009-2010 were the highest recorded for the previous ten years (DFW, 2011).

The improved recharge to these aquifers allowed an increase to licensed allocations from some of the aquifers in the Southern Basins Prescribed Wells Area, from a total available licensed allocation in 2010-2011 of approximately 8.1 GL to approximately 8.6 GL in 2011-2012.

Musgrave Basin Prescribed Wells Area supply

As with the Southern Basins Prescribed Wells Area, the above average rainfall in 2009-2010 and continuing good rainfall into 2010-2011 led to increased recharge into the aquifers of the Musgrave Basin Prescribed Wells Area and as a result there were water table rises of up to 0.4m in some of the aquifers of the Prescribed Wells Area (DFW, 2011). In some areas the water levels in 2009-2010 were the highest recorded for the previous ten years (DFW, 2011).

The improved recharge to these aquifers allowed an increase to licensed allocations from some of the aquifers in the Musgrave Basins Prescribed Wells Area, from a total available licensed allocation in 2010-2011 of approximately 1.8 GL to approximately 2.3 GL in 2011-2012.

Alternative supplies

Local government throughout the Eyre Peninsula region have well developed capacities for capturing and reusing stormwater and reusing treated wastewater for non-drinking purposes. The annual review showed that less stormwater was being captured and reused than had been projected and that less treated wastewater from Community Wastewater Management Schemes was being reused than had been projected, however this is likely to be due to difficulties in obtaining data rather than actual reductions in stormwater and wastewater capture and reuse.

Climate change

A new report released by DFW (Green *et al.*, 2012) is now available on the impacts of climate change on recharge to the Southern Basins and Musgrave Basin Prescribed Wells Areas and runoff into the Tod Reservoir catchment since the Statement was developed (as based on the work of EP NRM Board, 2009).

This report indicates that the impact of climate change on recharge to the Southern Basins and Musgrave Basin Prescribed Wells Areas is now projected not to be as severe as initial projections. Based on the most current science, climate change impacts on the Southern Basins Prescribed Wells Area will reduce by 24 per cent by 2050 (i.e. a gradual reduction of 0.4 per cent per annum) and by 26 per cent by 2050 to the Musgrave Basin Prescribed Wells Area (i.e. a gradual reduction of 0.43 per cent per annum) (Green *et al.*, 2012). Runoff into the Tod Reservoir catchment is projected to decrease by 45 per cent by 2050 (i.e. a gradual reduction of 0.75 per cent per annum).

While there was no decrease during the reporting period, year-to-year natural variability is not unusual and is expected even in an environment of long-term climate change.

Mining supply

As outlined in *Water for Good*, it is State Government policy that securing water for mining activities is the responsibility of the company.

The information regarding supply of water for mining purposes in the demand-supply projections in the Statement is sourced from the Resources and Energy Sector Infrastructure Council's (RESIC) Infrastructure Demand Study 2009. The annual review has revised the supply of water for mining purposes based on the recently released RESIC Infrastructure Demand Study 2011.

Based on the updated information, the annual review has shown that there is currently a greater volume of water being supplied for mining purposes, from the 2010-2011 projected volume of approximately 2.1 GL to an actual volume of approximately 4 GL in 2010-2011 from private desalinated seawater.

Demand drivers

Total demand for water

During the reporting period, demand for drinking quality water in the Eyre Peninsula region was approximately 3 GL lower than the Statement projections. Demand for drinking and non-drinking quality water was approximately 1.5 GL lower than the Statement projections.

Population growth

Advice from the Department of Planning, Transport and Infrastructure (DPTI) suggests that actual population growth was above the low population growth rate used in the projections but lower than the high population growth rate used.

DPTI have advised that the population growth rates out to 2050 should be revised to a lower rate, as actual growth is slower than projected. This advice is based on the 2006 population census conducted by the ABS, with due regard to post 2006 estimated residential populations which are also generated by the ABS. The lower growth rates have the impact of reducing the demand on water resources in the region than was originally projected.

Mining demand

As discussed in the supply drivers, it is State Government policy that securing water for mining activities is the responsibility of the company.

The information regarding demand of water for mining purposes in the demand-supply projections in the Statement is sourced from the RESIC Infrastructure Demand Study 2009 as well as advice from the previous Department of Primary Industries and Resources South Australia (PIRSA). The annual review has revised the demand of water for mining purposes based on the recently released RESIC Infrastructure Demand Study 2011.

Based on the updated information, the annual review has shown that there is currently a greater volume of demand for water for mining purposes, from the 2010-2011 projected volume of approximately 2.5 GL to the actual volume of approximately 4 GL in 2010-2011. This 4 GL is provided from private desalinated seawater.

Looking forward, it is anticipated that there will be significant growth in the demand for water for mining purposes. Although there will be increased demand, the majority of this water is expected to be sourced from private seawater desalination plants, with a smaller portion sourced from non-prescribed groundwater resources.

Essentially 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 the mining companies are suggesting they will supply the water for their operations from desalinated seawater or non-prescribed groundwater resources.

Stock

Based on advice from the former PIRSA, the Statement projections assume that stock demand will increase by 1.5% on the 2009-2010 level for ten years and then remain constant. Current advice from the Department of Primary Industries and Regions South Australia, is that the Statement projections remain valid.

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 demand-supply projections have been updated based on the following key factors:

- A new report (Green *et al.*, 2012) shows that the impact of climate change on the Southern Basins and Musgrave Prescribed Wells Areas is now projected not to be as severe as the previous best available information suggested (EP NRM Board, 2009);
- Total licensed allocations from the Southern Basins and Musgrave Prescribed Wells Areas will increase in 2012-2013 based on recharge to the aquifers;
- Advice from the Department of Planning, Transport and Infrastructure suggests that the population growth rates out to 2050 should be revised to a lower rate; and
- Demand for water from the mining sector is expected to be higher, however, the supply of water for the mining sector from private desalinated seawater supplies is also likely to be higher and therefore counteract the demand.

In light of the factors outlined above, the demand-supply projections have been revised. As in the Statement, two different demand-supply projections are considered under scenarios for both high and low population growth and climate change impact. However, based on the new climate change report, there is no difference between the projected high or low climate change impacts out to 2050 and therefore there is only one supply scenario.

The two different demand-supply projections are:

- 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 projection refers to drinking quality water and non-drinking quality water supplies; and demand for water for all human purposes such as domestic use, stock use, irrigation, industrial, commercial, mining, etc.

Table 3 outlines the impact on demand-supply for both projections under scenarios for both high and low population growth based on the new information described previously. The impacts of climate change have been incorporated into the new demand-supply projections however there is no difference between the projected high and low climate change impact out to 2050 and therefore the scenarios only differ due to population growth.

Table 3: Revised demand-supply projections

Scenario	Projection 1: Drinking-quality water demand and supply only	Projection 2: All water sources and all human demands
High population growth	Demand is projected to exceed supply in 2023-2024	Demand is not projected to exceed supply prior to 2050
Low population growth	Demand is projected to exceed supply in 2025-2026	Demand is not projected to exceed supply prior to 2050

Upon review of the demand-supply projections, under a worst-case scenario of high population growth, demand for drinking quality water is not projected to exceed supply until 2023-2024. Therefore an Independent Planning Process will not be required until 2018-2019.

This annual review indicates that, due mainly to the new climate change science and revised population growth rates, there is no longer the urgent need to initiate an Independent Planning Process in 2012-2013 as originally projected.

However, in keeping with the Water Industry legislation, the assumptions underlying the projections will be reviewed in twelve months time and, 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.

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