
Northern and Yorke Demand and Supply Statement

Annual Review 2013



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1 EXECUTIVE SUMMARY

The 2012–13 review of the demand-supply projections has indicated that based on current population growth, demand for drinking quality water is not projected to exceed supply prior to 2050. Given the results from the review, an Independent Planning Process is not considered to be required in the foreseeable future.

This is the second annual review since the release of the Northern and Yorke Demand and Supply Statement, in December 2011, which indicated that under a worst-case scenario, demand for drinking-quality water was not projected to exceed supply until 2044–45. As such, it was anticipated that an Independent Planning Process would not be required to be initiated until 2039–40. The 2012 review for the 2011-12 period also indicated that the population growth was lower than projected in the original statement. This trend continues to be the case for the 2013 annual review.

Water for Good outlines that Regional Demand and Supply Statements will be annually reviewed and this commitment also fulfils the requirements of the *Water Industry Act 2012*.

The annual review for the Northern and Yorke Statement is based on the best available information, provided by a range of organisations including, but not limited to, local government, the Australian Bureau of Statistics, the Department of Environment, Water and Natural Resources, SA Water, the Department of Planning, Transport and Infrastructure and the Department of State Development.

During the 2012–13 annual review period, demand for drinking quality water in the Northern and Yorke 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 Northern and Yorke region was 18.8 GL, compared with projected demands of 27.4 GL in the best-case scenario and 27.5 GL in the worst-case scenario. This is based on metered data from SA Water.

A 3,714 ML surplus of drinking quality water was recorded in the Northern and Yorke region, compared with projected best-case and worst-case scenario surpluses of 5,170 ML and 5,018 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 4,952 ML compared with projected best-case and worst-case scenario surpluses of 9,363 ML and 9,155 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 River Murray or prescribed wells areas or increased demand from population growth or viticulture, the timing for the demand-supply projections and associated Independent Planning Process will be adjusted accordingly.

Table 1: Revised demand-supply projections 2013 review

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 prior to 2050	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.

Water supply to all South Australian regions is a key priority for the State Government. The Northern and Yorke Statement aims to provide a 40-year overview of water supply and demand in the Northern and Yorke 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.

The statement, released in December 2011, indicated that under a worst-case scenario demand for drinking-quality water was not projected to exceed supply until 2044–45. As such, it was anticipated that an Independent Planning Process would not need to be initiated until 2039–40.

Water for Good indicates that Regional Demand and Supply Statements will be analysed and reviewed annually. 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.

3 ASSESSMENT OF DEMAND-SUPPLY PROJECTIONS

The Northern and Yorke Statement outlines demand-supply projections 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 Clare Valley Prescribed Water Resources Area and River Murray supply. When released in December 2011, the Northern and Yorke Statement projected that under a worst-case scenario of high population growth, demand for drinking quality water was projected to exceed supply in 2044–45.

The 2012 annual review of the Statement indicated that the actual population growth was above the best-case scenario of low population growth but lower than the worst-case scenario of high population growth. The revised projections indicated that demand for drinking quality water was not expected to exceed supply before 2050.

3.1 2012–13 SUPPLY AND DEMAND

Rainfall for South Australia as a whole in 2012 was 77 per cent of the long-term annual average (i.e. 23 per cent below normal) – the lowest since 2006. The start of 2012, however, saw cooler and wetter-than usual conditions for South Australia (BOM, 2013a).

Spring of 2012 was very warm and dry across the State and rainfall averaged across South Australia was very much below normal. Drier than normal conditions persisted through to the end of spring with the fifth driest October on record and November rainfall the lowest in 16 years (BOM, 2012).

Rainfall for the 2012-13 summer period across South Australia was widely below average. Across the State it has been the driest summer since the summer of 1985-86 with rainfall only 41% of the summer average. While rainfall totals were average to below average in agricultural districts only the far western districts and parts of the Flinders Ranges saw near normal rainfall for the summer period. Summer temperatures were widely above average. For South Australia the summer daily average temperature was 1.5 °C warmer than the long term summer average (BOM, 2013b).

The winter of 2013 experienced rainfall totals that were widely above average with rainfalls averaging 100 to 200 mm in the Western Agricultural Districts. The mean temperature for South Australia as a whole in winter 2013 was 1.4 °C warmer than the average (BOM, 2013c).

The majority of the observation wells in the Clare Valley Prescribed Water Resources Area (PWRA) forming the monitoring network in the Fractured Rock Aquifer display declining water level trends from 1989 to 2009, followed by rising water levels in the subsequent period up to 2013, which is associated with higher than average rainfall conditions. Sufficient data to undertake analysis of water level trends from 2012 to 2013 is available for 68 of the observation wells. The majority of wells (60%) show a rise in maximum recovered groundwater levels of up to 1.95 m. The remainder record declines of up to 2.07 m. The median change in water levels between 2012 and 2013 was an increase of 0.2 m. The slight overall increase in levels across the PWRA can be attributed to the wetter rainfall conditions, which appear to have generally compensated for the overall increased rate of extraction. Wells experiencing declining levels are located across the PWRA often in proximity to wells recording rising levels, supporting the historical pattern of water levels being affected by local variations in hydrogeological conditions and extraction regimes (DEWNR 2013).

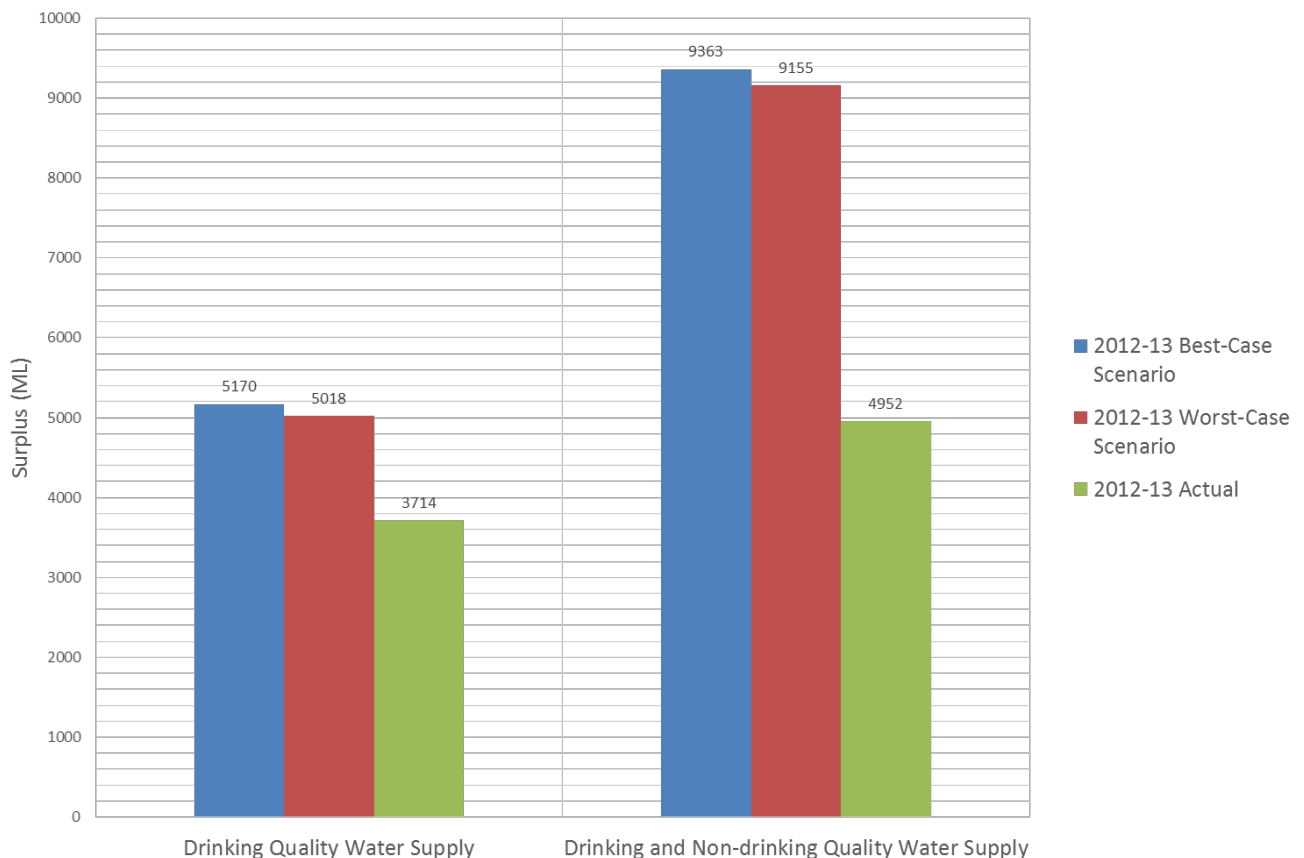
During 2012–13, demand for drinking quality water in the Northern and Yorke region was lower than the best and worst-case scenarios of low and high population growth in the Northern and Yorke Demand and Supply Statement. Mains water consumption for the Northern and Yorke region was 18.8 gigalitres, compared with projected demands of 27.4 gigalitres in the best-case scenario and 27.5 gigalitres in the worst-case scenario.

3.2 2012–13 ACTUAL AND PROJECTED AVAILABLE SUPPLY

Significantly lower actual demand from the mains water supply compared to projections in the Northern and Yorke Demand and Supply Statement resulted in a surplus in available supply for the Northern and Yorke region over 2012–13. 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 3,714 megalitre surplus of drinking quality water was recorded in the Northern and Yorke region, compared with projected best-case and worst-case scenario surplus of 5,170 megalitres and 5,018 megalitres, respectively (see Figure 1). If the quantities of drinking quality and non-drinking quality water (i.e. including recycled stormwater and wastewater and other prescribed water resources such as groundwater) were combined, there was a surplus of 4,952 megalitres (see Figure 1). The projections for the best-case and worst-case scenarios were for surpluses of 9,363 megalitres and 9,155 megalitres respectively.

Figure 1: Northern and Yorke 2012–13 available supply compared to projections



3.3 REVIEW OF ASSUMPTIONS

During development of the statement, a number of factors were identified that could affect the demand-supply balance for the Northern and Yorke 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 Northern and Yorke region demand-supply projections

KEY SUPPLY DRIVERS	KEY DEMAND DRIVERS
River Murray supply	Total demand for water
Clare Valley Prescribed Water Resources Area supply	Population growth
Baroota Prescribed Water Resources Area supply	Viticulture
Bundaleer, Beetaloo and Baroota Reservoirs	Stock
Non-prescribed groundwater resources	Mining
Alternative supplies	
Climate change	

3.4 SUPPLY DRIVERS

River Murray supply

Under normal flow and operating conditions, South Australia has a minimum entitlement of 1850 GL per year, of which SA Water has a licence for 50 GL per year for country town water supply purposes and their five-year rolling licence of 650 GL for metropolitan Adelaide. In extreme circumstances, i.e. 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. The Northern and Yorke region receives most of their River Murray water from the country town licence, with a smaller portion from the metropolitan Adelaide licence.

In 2012–13 SA Water supplied approximately 22.77 gigalitres of River Murray water to the Northern and Yorke region. This includes 870 megalitres that was supplied through the Clare Valley Water Supply Scheme for irrigation purposes. The Northern and Yorke Demand and Supply Statement assumed a maximum supply capacity of 31.8 gigalitres. Demand for water in the region during 2012–13 did not require that SA Water utilise the full system capacity.

Clare Valley Prescribed Water Resources Area supply

In 2012–13 there was a total of 1,393 megalitres of licensed surface water, 752 megalitres of licensed watercourse water and 2,086 megalitres of licensed groundwater available for allocation from the Clare Valley PWRA. Under a worst-case scenario, the Northern and Yorke Demand and Supply Statement assumed a maximum licensed available supply capacity in 2012–13 of 1,299 megalitres of surface water, 651 megalitres of watercourse water and 2,145 megalitres of groundwater. The total available licensed allocations in 2013–14 will remain consistent with the 2012–13 volume.

Baroota Prescribed Water Resources Area supply

The water allocation plan for the Baroota PWRA is under development and there is no new data about the volumes of water available for supply from the Baroota surface water, watercourse water or groundwater resources. Metered groundwater extractions from the Baroota PWRA amounted to 931 ML in 2012-13 (DEWNR 2013a). The volumes used in the Northern and Yorke Demand and Supply Statement remain valid.

Bundaleer, Beetaloo and Baroota Reservoirs

The Bundaleer, Beetaloo and Baroota reservoirs remain as stand-by water supplies as part of SA Water's State Disaster and Emergency Management Plan. The volumes used in the Northern and Yorke Demand and Supply Statement remain valid.

Non-prescribed groundwater resources

Key knowledge gaps identified in the region in relation to groundwater resources include groundwater storage, sustainable yield, rates and volumes of groundwater abstraction and processes of groundwater recharge (DEWNR 2011).

Further work has been undertaken since 2011 under the Non-Prescribed Regional Groundwater Assessments project to improve the understanding of the State's groundwater resources and their development potential outside the well-studied prescribed areas. An important component of this assessment is the delineation of the major aquifers (in both lateral and vertical extent) that will allow an estimation of the volume of groundwater stored in the aquifers and possible sustainable usage limits for future development.

3-D surfaces were produced for the major hydrostratigraphic units in the sedimentary basins within the Northern and Yorke region, using existing geological and stratigraphic logs from the state drillhole database (SA Geodata). The models were produced in the commonly available Adobe PDF file format to allow stakeholders and the general public to easily access the information products over the internet on DEWNR's Water Connect site (DEWNR 2014).

Three smoothing techniques were incorporated in developing the 3-D models and several assumptions made about the nature of the aquifers to develop a first-order estimate of groundwater storage in the Northern and Yorke region. Table 3 outlines this information, noting that there are no estimates for quaternary units and that it would not be physically possible to extract this total volume of water from the aquifers.

Table 3: Northern and Yorke – First-order estimate of groundwater storage Northern & Yorke Hydrostratigraphic Unit (DEWNR 2014)

	Cut Fill Calculated Volume (GL)	Specific yield (mean)	Storage (GL) (mean)
Basement (50m saturated thickness)	1,720,705	0.02	34,414
Tertiary	6,543,679	0.001	6,545
Quaternary*	-	0.097	-

* Currently the available Quaternary point data are insufficient to provide an estimated volume and further work is required to produce meaningful values.

While the above information demonstrates progress towards developing important information for non-prescribed groundwater resources in the region, there are key knowledge gaps that remain to be tackled.

The Department of Environment, Water and Natural Resources also carried out data collection for Phase 2 of the Non-prescribed Groundwater Resources Assessment project in the areas of Rocky River, Willochra and Walloway Basins. This included measurement of salinity and water levels. The reports are in the process of being completed and the findings will be incorporated into the next annual review of the statement.

Alternative supplies

Local government throughout the Northern and Yorke region has 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 capture and reuse.

The available volume of treated wastewater available from SA Water Waste Water Treatment Plants for non-drinking purposes was greater during the reporting period than was projected; however, the demand was lower than projected.

Climate change

Current advice from the Department of Environment, Water and Natural Resources is that the climate change projections used in the Northern and Yorke Statement remain valid.

3.5 DEMAND DRIVERS

Demand

During the reporting period, demand for drinking quality water in the Northern and Yorke region was approximately 8.7 gigalitres lower than the Northern and Yorke Demand and Supply Statement projections. Demand for drinking and non-drinking quality water combined was approximately 5.5 gigalitres lower than the Northern and Yorke Demand and Supply Statement projections.

Population growth

The Northern and Yorke Demand and Supply Statement adopted the South Australia and Statistical Divisions 2006–2036 population projections. 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 has advised that the population growth rate, when averaged out to 2050, is tracking only slightly higher than the low population growth rate scenario used in the Northern and Yorke Demand and Supply Statement.

Viticulture demand

The Northern and Yorke Demand and Supply Statement based the demand on water resources from the viticulture industry on the irrigation demand in the water allocation plan for the Clare Valley PWRA and the 2009–10 usage through the Clare Irrigation Scheme. The projected volume demanded, as outlined in the Northern and Yorke Demand and Supply Statement, was approximately 4 gigalitres. Actual demand, based on water taken from the Clare Valley PWRA in 2012–13, as well as the volume of water supplied through the Clare Irrigation Scheme, was approximately 3.0 gigalitres.

Stock

Based on advice from the then-Primary Industries and Resources South Australia, the Northern and Yorke Demand and Supply Statement projections assume that stock demand will increase by 1.5 per cent on the 2010–11 level for 10 years and then remain constant. According to ABS data, a downward trend in livestock numbers has been observed in the region over the last two years (ABS 2013) and this results in a decrease in the demand for livestock water. Long term projections however remain valid.

Mining

The Regional Mining and Infrastructure Planning Project – Yorke & Mid-North/Braemar (Deloittee 2014) prepared for the Department of Planning, Transport and Infrastructure and the Commonwealth Department of Infrastructure and Regional Development identifies potential additional water demand in the Northern and Yorke region. The report assesses three mining clusters with new mine development potential including Yorke, Frome South and Braemar. Of those, only Yorke is located in the Northern and Yorke NRM Region and the mining development is anticipated to include copper projects.

Three scenarios were developed to represent projected water demand utilising low, medium and high case forecasts for infrastructure demand. Separate from the availability of infrastructure, the progression of mines from prospects to developments and developments to major mines will be based on the underlying profitability of each mine and this is linked in part to the projected commodity prices. For low and medium scenarios the report assumes copper prices to see significant falls under the low global scenario, however new low cost copper/gold production is expected to be feasible at these price levels with higher gold prices offsetting falls in copper. For high scenario copper prices are expected to return to historic highs supporting new, low cost copper/gold/iron production in the Yorke Peninsula region.

Table 4 below includes projected water demands for the Northern and Yorke Region as outlined in the Deloitte's report.

Table 4: Projected mining water demand for the Yorke cluster (Deloittee 2014)

Mining water demand (ML)	2013-2017	2018-2022	2023-2032
Low	798	1,996	1,996
Medium	798	1,996	2,996
High	798	1,996	2,996

Although no demand from the mining industry has been factored into the projections developed in the original statement, over the identified periods, the water surplus in the region is projected to be significantly greater than the identified mining demand. The identified mining demand will be incorporated into the five yearly review of the statement when it is more clear which mining projects are likely to proceed.

4 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 review of demand and supply assumptions over the 2012-13 period indicates that the actual population growth is tracking lower than the high population growth projection used in the original Northern and Yorke Demand and Supply Statement. This confirms the observation made for the 2012 review.

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 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 etc.

Table 5 outlines the impact on demand-supply for both projections based on current population growth.

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 prior to 2050	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 prior to 2050. Therefore an Independent Planning Process is not considered to be required in the foreseeable future.

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 River Murray or prescribed wells areas or increased demand from population growth, viticulture or mining, the timing for the demand-supply projections and associated Independent Planning Process will be adjusted accordingly.

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