Consultation Report

Barossa Water Security Strategy
November 2022

Government of South Australia
Department for Environment and Water

1 Introduction

The Barossa Water Security Strategy (the Strategy) was prepared in partnership with regional organisations, stakeholders and state government agencies between April 2021 and May 2022. The Strategy development process was instigated by the Barossa community who highlighted water security issues facing the region. The need for a water security strategy for the region has been identified a number of times and aligns with the State Government's strategic priorities included in the 2022 Water Security Statement.

Leading into the Strategy development process, Barossa had experienced recent water scarcity due to a number of consecutive dry years, highlighting the risks to water availability. A review of the Barossa Water Allocation Plan also highlighted the risks posed by climate change to local water resources. In February 2021, planning for the Strategy development process commenced.

A strategic foresight and resilience based planning approach was taken, which allowed for the systematic consideration of key uncertainties facing the region, their impact on both demand and supply of water, and on the success or failure of strategic actions and adaptive measures. A workshop-based approach drew on the deep expertise of Barossa stakeholders. More than 40 participants with strong representation from grape growers, winemakers, graziers, academia and various levels of government were involved. Three workshops were held throughout 2021 to:

- develop a shared vision of the future of Barossa,
- create plausible future scenarios and
- identify options and actions to achieve the shared vision under the range or plausible future scenarios.

The Strategy was also informed by quantitative assessment – actions and pathways identified through the workshop process were evaluated using a system model and 'stress-tested' under future climate projections. The resulting actions form the Strategy – a draft of which was finalised in May 2022. The Strategy aims to provide confidence to business and the community that there will be sufficient water security to support their future vision.

2 Consultation Process

The draft Strategy was released for broader community consultation on 17 May 2022. Feedback was sought over an eight-week period up until 8 July 2022.

Information about the Strategy was disseminated via a number of means as detailed below:

- a copy of the draft Strategy and supporting information was made available on the DEW website on 17 May 2022 and on the Barossa Australia website on 18 May 2022
- participants involved in the Strategy development process were notified of the release of the draft Strategy and invited to provide feedback via email on 17 May 2022
- a media release was published on 19 May 2022 to inform the public about the consultation process
- radio interviews were held with 3 regional radio stations in response to the media release
- Newsletter articles were distributed by partner organisations
- First Nations committees and SA Native Title Services were notified of the consultation process on 20 May 2022
- Subscribers to the Barossa Water Security Strategy page on the DEW website were notified of the release of the draft Strategy and invited to provide feedback via email on 24 May 2022
- the Strategy was presented and discussed at the Green Wine Sustainability Barossa event, hosted by Barossa Australia and held in Tanunda on 26 May 2022
- the Strategy was discussed with First Nations representatives at an On-Country Water Workshop at Rowland Flat on 22 June 2022.

Department and regional staff met with a number of representatives to discuss the draft Strategy and also provided additional information over the phone and via email. Barossa Australia also canvassed their members to seek feedback on the draft Strategy.

3 Submissions and amendments

A total of 8 written submissions were received during the consultation period. Submissions were received from state government agencies, regional organisations and private industry. A list of submitters is provided at Appendix 1 and a table setting out all comments received during consultation is provided at Appendix 2.

Each comment provided in the submissions was considered when finalising the Strategy. Many comments resulted in amendment to the Strategy while others were more general in nature. An overview of the key issues raised and amendments made are set out in the sections below.

A table outlining all changes made to the Strategy as a result of consultation is provided at Appendix 3, with the changes made to the Guide set out at Appendix 4.

3.1 General feedback

Overall, submissions were supportive of the Strategy, the vision and the strategic actions put forward. Comments noted that the priorities are right and are positive for the region and Brand Barossa. The early engagement and co-development of the Strategy was commended.

3.2 Feedback on specific issues and challenges

Feedback highlighted a number of issues and challenges that face Barossa, some of which were not detailed in the Strategy. The key issues raised and amendments made in response are as follows:

Economic considerations

Comments noted the economic challenges of Barossa brand and the future costs of water under proposed water supply programs under investigation. It was noted that recently, declining yields due to a lack of water have had financial impacts, with the withdrawal of China from the wine market also adding financial stress. Affordability of water under the proposed Barossa New Water project was flagged as a concern – the capital costs are very high and may be out of reach for many growers.

A new section has been included in the Strategy setting out the key water challenges. This references factors such as the cost of water and affordability considerations and notes that there is limited scope for increasing planted area or yield unless additional cost effective water can be secured. Feedback will also be passed onto PIRSA who are leading the Business Case for the Barossa New Water Project.

Salinity

Comments raised the issue of salinity, particularly the negative impacts that the use of saline groundwater for irrigation has on soils, plant growth and quality of fruit. It was noted that salt meant that grapes and wines were rejected in some years due to not meeting quality requirements. One submission suggested that the elimination of saline groundwater for irrigation should be seriously considered. It was also queried as to whether the Bolivar treated wastewater would meet globally acceptable sustainable salinity levels.

Discussion of the impacts of salinity on plant growth and quality of fruit has been added to the strategy. It is acknowledged that reduced rainfall will impact on the leaching of salt from soils and increasing use of groundwater could exacerbate groundwater salinity, exacerbating risks to plantings. Salinity has also been included under the new section 'key water challenges'.

Climate change

Some comments noted that climate change is tracking worse than projected and that this could increase the additional volumes required to meet future demand. It was also raised that reliance on the River Murray, a source also expected to be negatively impacted by climate change, is a risk that should be highlighted. It was suggested that higher volumes of recycled water would be needed than set out in the Strategy, and that additional recycled water volumes could potentially replace River Murray and groundwater use.

It was also noted that the strategy doesn't address the impact of supply during repetitive waves of heat or extended drought.

Comments also noted the impacts of reduced flows on the environment. It was suggested that an environmental allocation be established to achieve environmental objectives/goals and that salinity issues will become more prevalent in the absence of flows.

Many of the actions in the strategy aim to address these challenges. The climate change modelling tested how much water would be needed in a high end climate projection to meet the full water demand of the existing planted area in the driest of years. It is acknowledged that other objectives could be tested (i.e. reduce reliance on the River Murray, replace groundwater use, replace the deficits expected to meet environmental requirements) to determine the volumes that may be required in different scenarios. While the climate modelling did consider extended drought periods, further work could be undertaken to identify options to manage extreme events.

Sustainability goals of Barossa

It was requested that the context be set in the broader sustainability agenda to 2050. It is acknowledged that Barossa has a strong focus on sustainability and many programs and projects are in train to meet sustainability goals. A foreword has been added to the Strategy to acknowledge the sustainability agenda of Barossa.

3.3 Other amendments

Aboriginal history in Barossa

Additional information has been added to the Strategy and Guide to describe the Aboriginal history of Barossa and the importance of continued engagement with Aboriginal Nations in the Strategy's implementation. The Strategy and Guide now reference the ongoing spiritual connection that Aboriginal people have to Country and the importance of continuing to practice cultural obligations. Ongoing engagement with Aboriginal Nations will be important to progress a number of the strategic actions set out in the Strategy and to also progress Aboriginal objectives for water, land and communities.

Minor edits were also made to correct errors or provide further clarity. These are detailed in Appendix 2 and 3.

3.4 Appendices

Appendix 1 – List of Submitters

Appendix 2 – Feedback received

Appendix 3 – Table of changes made to the Strategy

Appendix 4 – Table of changes made to the Guide

Appendix 1 – List of submitters

Submission #	Name	Title	Organisation
1	Sue Henderson	CEO	Schild Estate Barossa
2	Anne Morony	Chief Executive	RDA Barossa Gawler Light Adelaide Plains
3	Cameron Ashmead	Joint Proprietor	Elderton Wines
4	Grant Burge	Proprietor	Burge Barossa
5	Rachael Neumann	Manager Key Stakeholder Relations	SA Water
6	Louisa Rosa & Jason Spiteri	Chief Winemaker	Yalumba
7	Tim Gubbin	Senior Environment Protection Officer	EPA
8	Leon Deans		Deans Wine Consulting

Appendix 2 – Feedback received

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
7	Climate	The strategy doesn't address risk or the impact of 'supply capability' during repetitive waves of heat or extended drought.	*The analysis undertaken looked at extended periods of drought but not extreme heatwaves. Infrastructure sizing to respond to peak heatwave demand should be incorporated through detailed design of future water supply infrastructure.*	No change made to the Strategy
35	Climate	Recent climate change is no longer a topic for debate as it moves from prediction to eventuality at a rapid rate. DEW studies indicate that since 1996, statistically significant changes have occurred. Angaston rainfall has declined by 7.3%, resulting in North Para River run-off decline by 33%. It is a step change, a permanent shift in rainfall & run-off, rather than a gradual change. It has not plateaued, rather it continues in steep decline. Plus 'wet years' are getting drier. La Nina (2020-2022) delivered Decile 3-4 below average rainfall yet 13 previous La Nina (1910-2010) delivered Decile 7 above average rainfall. The most recent CSIRO State of the Climate (2020) shows that both the Barossa and the Murray Darling Basin (MDB) experienced the driest 20 years on record in 2000-2019, with a consequent 48% reduction in MDB run-off compared with 33% in the NPR. Alarmingly, rainfall is tracking along the bottom of the range of climate modelling scenarios. This questions assumptions on 'average' climate change scenarios. This biennial CSIRO analysis adds considerable weight to the need for both a precautionary and a visionary approach in identifying targets to future-proof the Barossa rather than just make up an historic water deficit.	*The climate change modelling undertaken through the Strategy development reflects these concerns and the need for a proactive approach to address projected water shortages in future.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
36	Climate	Less rainfall impacts water supply. Surface water – native and imported – represented 63% of 2018/19 irrigated volume and is under serious threat. A 10% rainfall decline leads to a 40% drop in run-off (supply), impacting on native water supplies - reducing runoff and recharge. Surface water could disappear completely by 2030 as only 22% (1,442ML) of entitlement volume was available representing 7% of Barossa irrigated volume. Groundwater (GW) supplied 25% of irrigated volume (5,372ML) in 2018/19. River Murray supplies (58%) - reducing runoff....Only 40% of permanent plantings could be watered in a very dry year [across the Murray system] and 450GL is still to be purchased from RM irrigators. Recycled water (10% of 2018/19) is unaffected as it is climate-independent. Soil profile water (stored rainfall) makes up the balance of water used during the growing season. If use 100mm for BV and 50mm for EV vineyards, then stored rainfall is 12.87GL. Spring rainfall losses impact irrigation requirements directly, as a 50mm rainfall loss equates to 7GL of additional irrigation requirement.	*The concerns raised are noted.*	Reliance on River Murray now referenced in 'key challenges' section on Page 11.
39	Cultural considerations	Ngadjuri, Peramangk & Kaurna - considerations have been simplified to healthy rivers.	*DEW and the Northern & Yorke Landscape Board are continuing to engage with First Nations peoples to identify objectives for healthy lands and waters. A new section has been added to acknowledge the Aboriginal Nations of Barossa and the importance of ongoing engagement.*	Additional information has been included in the Strategy around the importance of engaging with First Nations peoples' to achieve the future vision for Barossa, which includes thriving Aboriginal communities and businesses that is strengthened by its cultural heritage.
4	Delineation	The strategy needs to better delineate between Eden Valley and Barossa Valley. These two wine regions within the greater Barossa zone have quite marked differences in water resources, climate, ecosystems and the future challenges and opportunities that lay ahead. Each are therefore merited of specific strategic priorities in this plan so as to better underpin the future of Brand Barossa.	*It is acknowledged that there are differences between the Barossa Valley and Eden Valley, particularly related to challenges and opportunities. The differences are recognised specifically on page 7 and 8 These differences will be reflected in implementation planning and discussions.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
2	Economic considerations	It is very high level and lacks detail - we question whether it addresses the economic challenges of the Barossa brand. Specifically the economics don't stack up for Barossa wine brands with current decreasing yields and future costs of water under proposed water supply programs under investigation.	*The economic challenges, particularly in regards to the potential price of new water, are acknowledged. There may be opportunities to further explore economic considerations through implementation of this Strategy.*	Reference now made to the affordability of water influencing future demand
3	Economic considerations	The KBR water program is unreachable under its current guise - the capital costs are too high. The program requires significant start-up funding by Federal and State governments and capital payback over a minimum of 30 years (not 10-11 years) to attract investment in the program to secure water for the region.	*Your concerns are noted. It is acknowledged that affordability is a key issue related to any new source of water. A discussion on key water challenges has been added to the Strategy, including the key issues related to imported water.*	Reference has been made to key water challenges, including around affordability
5	Economic considerations	The retail prices for Barossa wine brands need to grow significantly to warrant such deployment of capital; this is made more difficult by increasing interest rates and cost of money in the current to medium term environment.	*It is acknowledged that affordability is a key issue related to any new source of water. A discussion on key water challenges has been added to the Strategy and this references the link between affordability and the ability to successfully market and sell premium Barossa produce.*	Reference has been made to key water challenges and notes the linkage between affordability and the ability to successfully market and sell premium Barossa produce.
6	Economic considerations	Economic sustainability is discussed and water resources are scarce. What is the end point of expansion for the region given the scarcity of water? Shouldn't this be discussed as part of the strategy?	*The analysis undertaken through the development of the Strategy considered volumes required to expand plantings or increase yield. This is contingent on access to new sources of water. Further detail is provided in the Guide to the Barossa Water Security Strategy.*	No change made to the Strategy
9	Economic considerations	All of the strategies discuss economic sustainability but don't discuss the competition for Brand Barossa from other regions (domestic or global).	*Barossa Australia addressing this through complementary work programs.*	No change made to the Strategy
11	Economic considerations	Viticulture value needs to include the value adding component so the value and contribution of wine (and water for wine) to the economy is articulated	*Confirmed that this is already reflected in the documents*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
40	Economic considerations	Despite having Australia's highest value variety-region combination (Barossa Shiraz), grape-growing is unprofitable. Revenue ($/ha) has been declining in both dollar and real terms since 2001. Figure 2 indicates revenue **declined** by 60% for BV and EV over a 19-year period. In contrast, ABARE (2019) found that the aggregate of Australian farm enterprises income **improved** by 60% in the same period. Barossa grape growers are in a poor financial position. Even in the wetter (La Nina) 2021/22 growers still lost money: BV lost a minimum $2,600/ha and EV lost a minimum $4,971/ha. The root cause of poor revenue/profitability appears to be a water deficit suppressing grape yields (supply hasn't kept up with real demand). Poor profitability threatens to undermine an otherwise profitable Barossa wine industry, with substantial reductions in vineyard area the most likely outcome. China's withdrawal from the wine market has worsened the losses. The original BNW proposal of $10k capital cost and $2k annual cost per ML of water represented an annualised cost of $2,700/ML (at 7% on capital). It is not surprising that many growers did not submit an EOI for Round 2.	*The economic challenges, particularly in regards to the potential price of new water and affordability, are acknowledged. A discussion on key water challenges has been added to the Strategy and this references the link between affordability and the ability to successfully market and sell premium Barossa produce.*	Reference now made to the affordability of water influencing on future demand.
22	Edit	Page 3 'Barossa' not 'The Barossa'	*This has been updated in the Strategy*	Reference updated to 'Barossa'
24	Edit	Page 7 - Eden Valley dams should show 8.45 GL capacity, not 8.45 ML	*The correction has been made*	8.45 ML updated to 8.45 GL
26	Edit	Page 9 - The word digitisation should be digitalisation.	*This has been updated in the Strategy*	'Digitisation' updated to 'digitalisation'
27	Edit	First column on page 12 - adopt more drought tolerant varieties - add 'and rootstocks'.	*This has been updated in the Strategy*	'Varietals' updated to 'varieties' and 'and rootstocks' added on Page 12

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
38	Environmental considerations (including salinity)	The environment is an essential component to future prosperity and extends far beyond tourism and residential amenity. Environmental needs include: 1) Maintain soil productivity and health through sustainable irrigation & salinity management – a) The globally accepted sustainable target for irrigation water is ≤0.5 dS/m EC (≤320ppm); b) Salt accumulates in the soil profile unless leached by rainfall or irrigation - this must be factored into the water budget, an indicative make-up volume for 25mm rainfall deficit adds 3.5GL to water demand; c) Adverse impacts of salt accumulation in the vineyard include locking water into the soil limiting plant update, poor vine health, reduced grape quality, reduced wine quality - a statutory limit disallows the sale of wines exceeding this limit. 2) Maintain (improve) the health of the North Para River ecosystem - sufficient water needed to maintain pool levels and aquatic health, as well as wetting the floodplain of streams for riparian plant health; an environmental water allocation must be established to deliver the WAP goals/requirements; means need to be identified to fund the environmental allocation. 3) Manage dryland salinity - salt mobilised through land clearing, a significant risk to Barossa; in the absence of flows, salt will continue to accumulate around the North Para River on the BV floor, can be expected to have serious impacts on the riparian ecosystem; environmental flows are essential for both wetting the riparian zone and for the continued removal of salts to maintain ecosystem health.	*There are significant challenges in addressing environmental risks posed by lack of flows. Actions in the strategy aim to return flows to the system and also highlight complementary actions, such as pest and plant management to improve the health of water-dependent ecosystems. Your concerns regarding the impacts of salinity are acknowledged. Reference has been made to the issues that salinity can cause.*	Salinity issues have been referenced in a new section 'Key water challenges' as well as in the groundwater discussion on Page 10.
37	Future demand	BNW modelling predicts a 6% decline in rainfall, a 3.5% increase in evapotranspiration by 2050, with a 23% increase in demand, or +3GL of additional water. Twenty-five years into the change, trends unfold to bring more precision than simple averages of predictions from a Monte Carlo analysis: • Rainfall is declining at the very worst of the predicted scenarios affecting both supply and demand – CSIRO State of the Climate (2020) together with DEW data for Angaston (2022) • Run-off is declining faster than rainfall infers, due to changes of intensity & timing, higher temperatures & more evaporation – DEW data for Barossa & CSIRO MDB run-off projections • Irrigation is now being applied earlier in the season. Half of BIL's water is now delivered by 31 December in contrast to 10% in the 1990's (Table 1), and in far-greater volumes (Table 2).	*The climate change modelling undertaken indicates that an additional 14 GL would be needed under a high-end climate projection to meet the full water demand of the existing planted area in the driest of years. It is acknowledged that additional volumes would be required for expansion (via yield or additional planted area), or for an objective of replacing current climate-dependent sources. The Strategy considered changes to seasonality and the impacts of changes in rainfall, PET and temperature on demand and supply variables, and acknowledges that improved environmental outcomes*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
		o Irrigation rates have nearly doubled from 0.8ML/ha to 1.5ML/ha in just 17 years o Yields fell from 6.7T/ha (2003) to 3.5T/ha (2019) mainly due to a lack of water Arguably, an additional 1ML/ha of irrigation water (14GL) is likely needed to maintain current (poor) yields over the next 30-years plus need to replace 1.4GL of lost surface water, and additionally should replace 5.4GL of unsustainably saline groundwater. The River Murray is unreliable, and if the Barossa is to be sustainable the whole 12.5GL RM water should be replaced.	*could be achieved if additional volumes of imported water could be provided to substitute reliance on native surface water and groundwater resources.*	
41	Future demand	It is not clear whether the 3GL additional demand to 2050 reflects real demand or just aggregated demand based on the high price proposed for BNW. It could be useful to aggregate demand and then work backwards to establish the cost: It could be useful to aggregate demand and then work backwards to establish the cost: • Supply for irrigation increased by 0.7ML/ha in 17 years to 2018/9… guess +14.0GL o Supply has not kept up with demand leading to declining yields o It is probable for a further 1.0ML/ha increase in demand over 32 years (14GL) • Surface water is disappearing, if use dry 2018/19 as datum & replace the volume… +1.4GL • Environmental flows need to be established for NPR. If 20% of historical flows… +2.6GL • Saline GW is unsustainably saline and needs to be replaced… +5.4GL • River Murray (BIL & SA Water Off Peak) is already unreliable and will worsen… +12.4GL • No leaching requirement included as it needs to be calculated • No additional plantings, adaptation to occur within the current planted area. • Represents a total demand for climate-independent water of 35.8GL (say) 36GL • Therefore, the indicative total requirement is 36GL by 2050.	*The 3GL additional demand relates to the increased crop water requirements for existing plantings due to a warmer and drier climate. Additional volumes would be needed for expansion, either via increased yield or additional planted area, or to replace existing sources of water.*	No change made to the Strategy
10	Geographic area	Barossa is located in the Barossa Light and Lower North region, not the mid-North region.	*This is now reflected in the Strategy*	The region has been updated to the Barossa Light and lower North region in the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
8	Implementation	Priorities of the strategies should be to address the most essential projects first, best use of time and outcomes of the investment.	*This will be considered through implementation planning.*	No change made to the Strategy
1	Overall strategy	We support the strategy and believe all suggestions put forward are positive for the region and Brand Barossa.	*Feedback noted*	No change made to the Strategy
12	Overall strategy	We are in favour of the new water strategy and look forward to its implementation.	*We look forward to working with regional organisations and stakeholders to progress implementation of the actions in the Strategy.*	No change made to the Strategy
13	Overall strategy	We are happy with the document and have no further comments.	*Feedback noted*	No change made to the Strategy
14	Overall strategy	We have valued our early and ongoing engagement with the Department for Environment and Water in developing the Barossa Water Security Strategy, considering our shared interests in this important issue.	*Feedback noted*	No change made to the Strategy
15	Overall strategy	We acknowledge the criticality of water security for the South Australian population which ultimately underpins healthy, thriving communities and sustainable economic growth for South Australia, and supports the future vision for the Barossa.	*Feedback noted*	No change made to the Strategy
16	Overall strategy	We are supportive of the draft Barossa Water Security Strategy, which has strong alignment to our strategy.	*Feedback noted*	No change made to the Strategy
17	Overall strategy	In support of the draft Barossa Water Security Strategy we welcome the opportunity to continue to work with DEW and other stakeholders on the key priorities within the strategy, to enable water security for the Barossa region in our changing climate.	*We look forward to working with regional organisations and stakeholders to progress implementation of the actions in the Strategy.*	No change made to the Strategy
18	Overall strategy	Broadly, the strategy is what we expected to see. The priorities are right and its talking about the right things.	*Feedback noted*	No change made to the Strategy
20	Overall strategy	We like the pillar format. We query whether it is a strategy for growth or status quo.	*Feedback noted. The analysis undertaken through the development of the Strategy considered volumes required to expand plantings or increase yield. This is contingent on access to new sources of water.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
30	Overall strategy	Add endorsements to the 'developed in partnerships page'. For example, we would be happy to endorse the strategy and think others would too. Lends weight to its importance.	*Feedback and support for the strategy noted.*	No change made to the Strategy
31	Overall strategy	Could acknowledge inclusiveness and collaboration of working with other regions.	*The Guide references a number of existing collaborations and also highlights opportunities for further collaboration, particularly as related to adjoining water management projects and around research initiatives*.	No change made to the Strategy
32	Overall strategy	We have reviewed the strategy and have no additional comments from previously provided.	*Feedback noted*	No change made to the Strategy
33	Overall strategy	Commend DEW for providing the resources to build this Strategy. It is expected that it will guide the development of policies and actions necessary to offset climate change induced water deficits to build Barossa's horticulture into reliable and robust enterprises. Without profitable and sustainable viticulture, the Barossa wine industry cannot exist.	*Feedback noted*	No change made to the Strategy
34	Overall strategy	This is a well-structured and thought-out document, which provides a framework for the future actions required to underpin the Barossa's water security. The picture you have painted of the future state for 2050 is excellent as it provides a target for all the improvement efforts needed to deliver on that vision.	*Feedback noted*	No change made to the Strategy
43	Potential gaps	Other users missed, (e.g., graziers & horse breeders) are adversely impacted by low run-off leaving dams empty a) The majority of Eden Valley has no access to public water supplies and is reliant on surface water for household and livestock. i) There are already stories around de-stocking due to recent low rainfall b) It is easy to just consider wine given that it likely exceeds 95% of irrigated water use, but water security is a broader goal than just one industry and irrigation c) It could necessitate a more costly delivery system, but other users should not be ignored.	*It is recognised that there are many industries in Barossa that rely on water in addition to the wine industry. Barossa Improved Grazing Group contributed directly to the strategy development. The strategy also includes actions that would lead to business diversification.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
44	Potential gaps	Elimination of saline groundwater irrigation should be seriously considered at this time a) An indicative 7,617T of salt was irrigated within the 5.37GL of GW (median salinity 1,418ppm) used for irrigation in 2018/19 i) The total River Murray volume (BIL & SA Water) of 12.4GL at 250ppm salinity contributed 3,100T salt, less than half the GW salt for 2.5-times the volume. b) Not only is this unsustainable, but GW availability was forecast to decline by 15% by 2030. DEW preliminary analysis suggests that declines will likely be worse & salinity increase, with the analysis still in progress.	*Salinity impacts are acknowledged as a key issue. Changes have been made to include discussion on salinity issues.* *It is also noted that the management of groundwater is via the Barossa Water Allocation Plan, currently undergoing amendment. This process will consider how best to manage the take and use of groundwater to ensure use is sustainable.*	Salinity issues have been referenced in a new section 'Key water challenges' as well as in the groundwater discussion on Page 10.
45	Potential gaps	The Barossa New Water (BNW) project is predicated on winter water ex Bolivar. The Virginia Pipeline Scheme takes summer water as it is produced. BIL premium water is also supplied during summer, without storage losses (as metering occurs at farm gate). a) The majority of BNW will need to be stored in dams and subjected to up to 35% evaporation loss. If able to access large (and deep) dams may be able to reduce the loss to 15% when timing of use is considered. b) This either reduces irrigation volume or increases the volume needed. i) A 3GL requirement with a 15% loss, needs (3.0/0.85) 3.53GL needs to be delivered ii) Evaporation produces increased salinity from 400ppm to (400/0.85) to 471ppm, about 50% higher than global sustainability guidance. iii) It also drives up infrastructure and operating costs by 1/0.85 or 18% c) BNW delivery management is a different paradigm to BIL (Barossa Infrastructure Ltd): i) It is cost plus 18% to allow for target application rate, and it must to be stored ii) Higher salinity - near double when compared with the BIL supply and 50% more than global sustainability guidance at the point of application to the vineyard	*These details are considered directly in the Barossa New Water detailed business case and are outside of the scope of the strategy.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
46	Potential gaps	4) Stormwater harvesting can offer a 'new' source of water as run-off from hardstand areas (roof, road & footpath) increases as towns expand within the PWRA (prescribed water resource area). a) This may be useful for existing run-off from Tanunda, Nuriootpa & Angaston. i) Current run-off could also be considered as partial environmental flows (i.e., using them may require an equivalent water volume replacement) but it should be investigated. b) Future urban developments at Concordia and Roseworthy offer potentially significant and valuable volumes of low salinity water for the Barossa. i) The existing Bruce Eastick flood management dam could be utilised for Roseworthy stormwater for example. ii) Typical salinities (without contamination from dryland salt) could be an excellent 50ppm c) It is understood that current legislation (in effect) prohibits storm water capture and re-use. i) If correct, then it is recommended that the Landscape Act (2019) be amended to allow its inclusion in future WAP. ii) This could positively affect other Northern & Yorke Landscape Board WAP's such as Baroota (Pt Pirie) and provide the legislative capability for other SA WAP's (Adelaide Hills & McLaren Vale) to utilise a high-quality source.	*The Strategy notes that stormwater from new developments could be a significant new source of water for Barossa – more information is provided in the Guide. The Barossa Water Allocation Plan, undergoing amendment, can also be updated to allow for the take and use of stormwater. This would be consistent with policies in other water allocation plans across the state.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
47	Potential gaps	Water rights are property rights a) The August Barossa Water Security Strategy workshop, indicated BNW will not be tradable b) If correct, then it renders the project unviable i) No grape grower should invest in vineyard development without water security ii) No bank will lend against BNW (or a BNW watered vineyards) as there is no security iii) In a subsequent real estate transaction, the right to use BNW is extinguished (1) BNW dependent vineyard values are also extinguished (no water = no vines). (2) Actual vineyard value is less than the bare land value c) In comparison, Barossa GW and SW entitlements are tradable at indicative values below: i) GW (ground water) has recently firmed to $7,000/ML (1) Use of this unsustainable resource appears to be growing (2) This puts the total value of GW 'property' in the Barossa at $73m (10,399ML at $7k) ii) SW (surface water) on thin trade (limited sales) is similarly priced at $7,000/ML (1) This puts the total value of SW 'property' in the Barossa at $45m (6,437ML at $7k) iii) The proposed BNW 'property' is not tradable – a putative value of $0/ML (1) Hence, it is worthless (3,000ML at $0) (2) Banks will value accordingly, unpicking vineyard values as the water not secure d) BNW 'entitlements' must be recognised as property in a similar manner to SW and GW. i) Without this, both growers and financial institutions have no security and will be unable to invest (or lend) with confidence.	*These details are considered directly in the Barossa New Water detailed business case and are outside of the scope of the strategy.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
48	Potential gaps	SA Water treatment obligations a) The SA Water website implies an obligation to treat wastewater to a level allowing re-use. i) Current Bolivar salinity is stated as 1165ppm with very-high Sodium Absorption Ratio ii) This water is highly unsuitable for sustained use as irrigation. b) The proposed BNW salinity target of 300-400ppm will presumably mean a 400ppm salinity limit produced using best endeavours, (rather than 300ppm). i) This is produced in winter and must be stored, creating a best-case post-evaporation salinity of 470ppm, 50% higher than globally acceptable sustainable salinity levels c) If utilise treated wastewater, for sustainable irrigation, driving economic prosperity, the water must be treated to the globally accepted salinity guideline of <320ppm salt d) The cost should be borne by the previous users as the treatment is needed to reinstate its previous amenity (albeit still retaining 50% more salt than it had upon entering the household).	*SA Water is Australia's second largest recycler of water, reusing one in every three litres of treated wastewater in irrigating wine and horticulture regions and city parklands. SA Water must ensure the Bolivar Wastewater Treatment Plant effluent meets annual loads of total nitrogen and suspended solids discharged to waters as per the Adelaide Coastal Waters Quality Improvement Plan of 300 tonnes per year of total nitrogen and 760 tonnes of suspended solids.* *Water quality for irrigation by current users is managed with blending with other onsite sources of water or in some cases by point of use treatment, further consideration to alternative approaches is being undertaken via the Barossa New Water detailed business case. The impacts of utilising saline water for irrigation are noted and have now been referenced in the Strategy.*	Salinity issues have been referenced in a new section 'Key water challenges' as well as in the groundwater discussion on Page 10.
42	Recycled Wastewater	The currently uncommitted water supply outlook is for 82.5GL by 2050. This could provide valuable high-quality water to service horticulture in the Northern Adelaide Plains (vegetables), Barossa (vines), Clare (vines), and even the Adelaide Hills. 1. The current Adelaide population is 1.378m, projected to reach 2.0m in 2050 or 45% growth 2. Current wastewater output into Gulf St Vincent is 58GL with business as usual seeing it grow to 85GL by 2050 a. Bolivar freshwater 60GL pa in 2022, expected to reach a net 87GL in 2050 i. Less 20GL committed to Virginia Pipeline Scheme (and Bunyip Water), ignoring the undersubscribed NAIS (Northern Adelaide Irrigation Scheme) ii. Net volumes of 40GL in 2022, and 67GL in 2050 b. Bolivar saline water 10GL (assumed) in 2022 at 7,500ppm salinity,	*There is potential to harness significant volumes of recycled wastewater for reuse. The financial viability of a range of options are currently being investigated as part of the Barossa New Water Project detailed business case.*	No change made to the Strategy

Comment #	Topic	Comment Summary	Response	Changes to the Strategy
		no growth to 2050 i. Assume desalinate with waste-stream salinity ≤95% of St Vincent Gulf salinity (to allow mixing) for a net 7.5GL freshwater in 2050 c. Glenelg freshwater discharge to St Vincent Gulf is estimated at 8GL pa in 2022 3. A larger scheme, utilising as much of the available water as possible offers SA a potentially enormous return in the face of global warming disruptions to water supply. Climate independent water from Bolivar and Glenelg offer a long-term solution producing high-value horticulture (vegetables, grapes, fruit) that will help set SA up for future prosperity.		
25	Salinity	There is no mention of salinity on pages 7 and 8 for either Barossa Valley or Eden Valley - this should be included. Could be included on Page 10.	*Salinity impacts are acknowledged as a key issue. Changes have been made to include discussion on salinity issues.*	Salinity issues have been referenced in a new section 'Key water challenges' as well as in the groundwater discussion on Page 10.
29	Salinity	Flow charts late 1990s early 2000s grapes and wines were rejected - need to bring in the effects of salt. Talk more about salt and salinity.	*Salinity impacts are acknowledged as a key issue. Changes have been made to include discussion on salinity issues.*	Salinity issues have been referenced in a new section 'Key water challenges' as well as in the groundwater discussion on Page 10.
21	Strategic actions	Page 3 - prefer the objective of 'healthy seasonal waterways' instead of 'healthy flowing waterways' which creates unrealistic expectations - i.e. it may or may not be possible for all waterways to flow all year round.	*This has been updated in the Strategy*	Reference to 'healthy flowing waterways' updated to 'healthy seasonal waterways'
28	Strategic actions	Action 4.3 - seemingly 'token' and presumptive Aboriginal business action. Suggest put full stop after 'business'.	*This has been updated in the Strategy*	Action 4.3 updated to 'Provide opportunities for Aboriginal nations' businesses'.
19	Sustainability	Would like to see context set in the broader sustainability agenda to 2050 somewhere at the start. Call out River Murray.	*The concerns raised regarding reliance on the River Murray are noted. Acknowledgement of the strong sustainability agenda in Barossa included.*	Reliance on River Murray now referenced in 'key challenges' section on Page 11.
23	Terminology	The term 'regenerative agriculture' has been hijacked to mean organics. Concerned that using the term will lock Barossa into organic expectations. Highly recommend a footnote on Page 3 that defines what is meant by regenerative agriculture. Eden Valley imperative.	*This has been updated in the Strategy*	A footnote has been added to Page 3 with a definition of regenerative agriculture

Appendix 3 – Table of changes to Strategy

Section	Page No.	Reason for change / comment	Change made
Foreword	1	To address feedback - would like to see context set in the broader sustainability agenda to 2050 somewhere at the start.	Foreword included in the document to note the strong focus on sustainability and environmental stewardship in Barossa
2050 Vision	3	To address feedback - name of the region is 'Barossa' not 'The Barossa'	Removed 'The' from 'The Barossa'
2050 Vision	3	To address feedback - refer to 'healthy seasonal waterways' instead of 'healthy flowing waterways', more realistic	Changed 'healthy flowing waterways' to 'healthy seasonal waterways'
2050 Vision	3	To address feedback - recommend a footnote on Page 3 that defines what is meant by regenerative agriculture	Footnote added to define the term 'Regenerative Agriculture ' in the context of the strategy
Barossa at a glance in 2022	5	To address feedback - incorrect region noted in the figure	Barossa located within the Barossa Light and Lower North Region of South Australia (rather than the Mid North Region)
Eden Valley snapshot	7	To address feedback - Cambrai not in Eden Valley	Reference to Cambrai removed from under River Murray Water heading as it is not located in Eden Valley
Eden Valley snapshot	7	To address feedback - Omitted North Para River as being surface water resource located in Eden Valley	North Para River added as a surface water resource located in Eden Valley
Eden Valley snapshot	7	To correct an error - incorrect measure of volume	8.45ML amended to 8.45GL
Background	9	The word digitisation should be digitalisation.	Digitisation amended to digitalisation
Background	9	To reflect new content developed through engagement with First Nations representatives	New section added setting out Aboriginal history in Barossa and the importance of ongoing engagement to progress objectives for First Nations communities
Water security in a changing climate	10	To address feedback - need to bring in the effects of salt. Talk more about salt and salinity.	Section updated to include discussion on the impacts of irrigating using saline groundwater - impacts on soils, plant growth and quality of fruit
Water security in a changing climate	10	To address feedback - strategy doesn't address economic challenges. Call out River Murray.	New section added outlining the key water challenges, including reference the issue of affordability of water and also risk of reliance on the River Murray

Section	Page No.	Reason for change / comment	Change made
Actions to manage demand	12	To address feedback - Suggested to add 'rootstocks' when discussing drought tolerant 'varietals', and refer to 'varieties' instead of 'varietals'	Amended so sentence reads 'The adoption of more drought tolerant varieties and rootstocks is able to reduce water use'. Next sentence amended to reference 'variety' instead of 'varietal'.
Increasing water supply through imported water	13	To add clarity around the volumes needed for Barossa Valley and Eden Valley in a mid-range and high end climate change scenario	Added differentiation of the total volume needed for Barossa Valley and Eden Valley (8GL and 14GL references)
Strategic actions	16	To address feedback - refer to 'healthy seasonal waterways' instead of 'healthy flowing waterways', more realistic	Vision element updated from 'healthy flowing waterways' to 'healthy seasonal waterways'
Strategic actions	17	To address feedback - suggest finishing sentence after 'businesses' and remove 'and demand for Aboriginal products'. Seems tokenistic and presumptive otherwise.	Action 4.3 amended to read 'Provide opportunities for Aboriginal nations' businesses'. Further engagement with First Nations proposed to ensure implementation directly relates to their objectives.
How was the strategy developed	19	Updated dates that the Strategy was consulted on and published	Figure showing the Strategy development process and timeline updated to note that the Strategy was consulted on between May-July 2022 and published in September 2022
Next steps	21	Updated reference to consultation as this process is now complete	Reference to consultation process removed
Next steps	21	Update reference to consultation as this process is now complete - will need to build on from engagement undertaken during development of the strategy	Sentence updated to read 'Identifying Aboriginal people's cultural objectives and outcomes for water is progressing through the amendment of the Barossa Water Allocation Plan and building on from engagement during development of this strategy'

Appendix 4 – Table of changes to Guide

Section	Page No.	Reason for change / comment	Change made
2050 Vision	6	To address feedback - refer to 'healthy seasonal waterways' instead of 'healthy flowing waterways', more realistic	Changed 'healthy flowing waterways' to 'healthy seasonal waterways'
2050 Vision	6	To address feedback - recommend a footnote on Page 3 that defines what is meant by regenerative agriculture	Footnote added to define the term 'Regenerative Agriculture ' in the context of the strategy
How has this strategy been developed	8	Updated dates that the Strategy was consulted on and published	Figure showing the Strategy development process and timeline updated to note that the Strategy was consulted on between May-July 2022 and published in September 2022
New section - Aboriginal history in Barossa	14	To reflect new content developed through engagement with First Nations representatives	New section added setting out Aboriginal history in Barossa and the importance of ongoing engagement to progress objectives for First Nations communities. 2.2 People and industry updated to be 2.3.
Barossa at a glance in 2022	15	To address feedback - incorrect region noted in the figure	Barossa located within the Barossa Light and Lower North Region of South Australia (rather than the Mid North Region)
Eden Valley snapshot	21	To address feedback - Cambrai not in Eden Valley	Reference to Cambrai removed from under River Murray Water heading as it is not located in Eden Valley
Eden Valley snapshot	21	To address feedback - Omitted North Para River as being surface water resource located in Eden Valley	North Para River added as a surface water resource located in Eden Valley
Eden Valley snapshot	21	To correct an error - incorrect measure of volume	8.45ML amended to 8.45GL
Key current and future challenges and risks	30	To address feedback - strategy doesn't address economic challenges. Call out River Murray.	Section updated to the key water challenges, including reference the issue of affordability of water and also risk of reliance on the River Murray
Changes in native water sources	38	To address feedback - need to bring in the effects of salt. Talk more about salt and salinity.	Section updated to include discussion on the impacts of irrigating using saline groundwater - impacts on soils, plant growth and quality of fruit

Section	Page No.	Reason for change / comment	Change made
Results: Pathway 4	44	To correct an error	05100% corrected to 100%
Key points	45	To add clarity around the volumes needed for Barossa Valley and Eden Valley in a mid-range and high end climate change scenario	Added differentiation of the total volume needed for Barossa Valley and Eden Valley (8GL and 14GL references)
Strategic actions	48	To address feedback - refer to 'healthy seasonal waterways' instead of 'healthy flowing waterways', more realistic	Vision element updated from 'healthy flowing waterways' to 'healthy seasonal waterways'
Strategic actions	49	To address feedback - suggest finishing sentence after 'businesses' and remove 'and demand for Aboriginal products'. Seems tokenistic and presumptive otherwise.	Action 4.3 amended to read 'Provide opportunities for Aboriginal nations' businesses'. Further engagement with First Nations proposed to ensure implementation directly relates to their objectives.
4.1 Integrated supply and demand management	50	To correct an error	Added 'of' in the third column so sentence reads 'the notion of significant demand….'
4.1 Integrated supply and demand management	50	To correct an error	Removed 'mosts' from the end of sentence in the third column
4.1 Integrated supply and demand management	52	To correct an error	Footnote 21 in the text amended to be superscript
4.4 Business innovation and diversification	63	To address feedback - suggest finishing sentence after 'businesses' and remove 'and demand for Aboriginal products'. Seems tokenistic and presumptive otherwise.	Action 4.3 amended to read 'Provide opportunities for Aboriginal nations' businesses'. Further engagement with First Nations proposed to ensure implementation directly relates to their objectives.
5. Further recommendations and next steps	69	Update reference to consultation as this process is now complete - will need to build on from engagement undertaken during development of the strategy	Sentence updated to read 'Identifying Aboriginal people's cultural objectives and outcomes for water is progressing through the amendment of the Barossa Water Allocation Plan and building on from engagement during development of this strategy'

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