



Ashraf El-Sherbini
Director
Resilient Cities and Towns
NSW Department of Planning Industry and Environment

Dear Mr. El-Sherbini

RE: Draft Greater Sydney Water Strategy Submission

Sydney Desalination Plant Pty Limited (SDP Pty Ltd) appreciates the opportunity to comment on the NSW Government's draft Greater Sydney Water Strategy (the Draft Strategy).

As an integral part of Sydney's water supply system, we support the Draft Strategy as a robust plan that will increase the resilience of Greater Sydney's water supply into the future.

Increasing and diversifying Sydney's sources of rainfall independent water supply will be critical to supporting a growing population and helping to mitigate the impact of climate change, which is likely to result in more frequent and severe weather events that threaten the ability of the existing supply system to meet future water demand.

Greater utilisation of SDP would improve water supply system resilience at very minimal cost and deliver greater value to customers from an asset that customers and shareholders jointly fund.

As we outline in this submission, environmental sustainability is core to our business. 100% of power used by SDP is offset by renewable electricity generated by the Capital Wind Farm near Bungendore in NSW. SDP's world-class outfall diffuser design ensures the salinity of out-take water is diluted so that it does not adversely impact the marine environment. We also monitor and manage a 15-hectare conservation area next to SDP (one third of our site). These factors ensure that SDP's contribution to water supply is environmentally sustainable.

Over the medium to long-term, an expansion of SDP and exploration of recycled water opportunities would help to increase Sydney's rainfall independent sources of water supply to a level consistent with other major Australian cities. An expansion of SDP would also provide benefits to the broader NSW economy, creating jobs and contributing to economic growth.

SDP Pty Ltd has significant expertise in water filtration using membrane technology which is similar and complementary to what is needed to produce purified recycled water. We can share our knowledge and experience to support the Draft Strategy.

Increasing Sydney's rainfall independent supply will need to be combined with smarter water use, greater water conservation and integrated water cycle planning to encourage the recycling of water where efficient. These activities will be critical to ensuring Sydney's water resilient future.

If you would like to discuss any elements of our submission please contact myself or Ifty Omar, General Manager Regulation, SDP at [REDACTED]

Yours Sincerely

Philip Narezzi
Chief Executive Officer
Sydney Desalination Plant Pty Limited



Sydney Desalination Plant Submission

Draft Greater Sydney Water Strategy

5 November 2021

1. Introduction

The Sydney Desalination Plant (SDP) is Sydney's most significant source of rainfall independent water supply, capable of supplying an average of 250 million litres (ML) of water a day or 90 billion litres (GL) of water a year, equivalent to roughly 15% of Sydney's water demand. SDP is located in Kurnell and connects into Sydney Water's supply network via a large pipeline between Kurnell and Erskineville. SDP Pty Ltd is jointly owned by the Utilities Trust of Australia (managed by Morrison & Co) and Ontario Teachers' Pension Plan.

Initially developed to supplement Sydney's water supply in the event of severe drought, Sydney's experience to date has demonstrated that SDP can provide far more value than drought response alone. In the last four years, SDP Pty Ltd has reliably responded to drought, as well as emergencies caused by bushfires, the COVID-19 pandemic and floods to help secure Sydney's water supply. In other Australian cities, desalination plants are also used as a flexible source of supply to increase overall system resilience.

SDP Pty Ltd plays a key role in securing Sydney's water supply and we look forward to working with all stakeholders to map out a path that makes greater use of SDP to achieve a more water resilient Sydney in the future.

2. Sydney needs a more resilient water supply

Sydney's population is expected to grow by over 1 million (almost 20%) over the next 15 years, with the NSW Government committed to population growth as a key driver of future economic growth for the state. Such growth will substantially increase the city's water needs and economic growth will be hampered if this additional demand cannot be sustained by Sydney's water supply system.

In parallel to substantial population growth, extreme weather events continue to threaten both the quantity and quality of water available in Sydney's major dams. The last drought saw dam levels fall at an unprecedented rate, dropping 50% in two and a half years. This rate of decline would have been even faster with higher water demand from a larger population. In the last few years catastrophic bushfires and floods have also threatened the quality of water coming from Sydney's dams. SDP, as Sydney's main source of rainfall independent supply, was successfully called on to supplement Sydney's water supply in response to these events.

At present, Sydney has a relatively small percentage of rainfall independent water supply compared to other major Australian cities (Sydney's total rainfall independent supply is about 23% of total demand). As noted in the NSW Government's Draft Greater Sydney Water Strategy (the Draft Strategy), Sydney's desalination capacity (around 15% of total demand) is less than half the desalination capacity of Melbourne, Perth, and Adelaide respectively. In addition, in those cities, the desalination plants are continuously available, providing far more value to customers than drought response alone.

As highlighted above there is clearly a need for greater use of, and investment in, rainfall independent sources of supply such as desalination and water recycling to increase the resilience of Sydney's water supply system. This needs to be complemented by more sustainable water use and integrated water cycle planning to meet the challenges of the future.

3. Sydney needs greater flexibility in its water supply system

SDP Pty Ltd is ready and committed to supporting the Draft Strategy's proposal to increase utilisation of SDP. Keeping SDP available and allowing it to operate more flexibly would deliver more value to customers from an asset that they and shareholders jointly fund, and it would be at

a low marginal cost. Such a move would also delay the need for water restrictions in response to low rainfall and declining dam levels.

Under current arrangements, SDP is switched off and placed into a state of preservation outside of drought. Restarting the Plant is a process that can take at least eight months. Switching off SDP severely hampers the speed at which it can ramp up to full production and the total amount of water that it can provide during drought. Current arrangements also make it very difficult for SDP to provide any water supply outside of drought, such as in response to a short-term outage in part of the water supply network, to help mitigate an aesthetic or health related water quality issue in the network, or to support important network maintenance.

SDP has safely and efficiently responded to acute public health challenges over the last two to three years (i.e., bushfires, the COVID-19 pandemic and floods), meeting and exceeding service standards. However, this would not have been possible if SDP had been switched off (in a state of preservation) immediately prior to these events. It was only by chance that these public health challenges occurred soon after the plant was switched on for drought response and so SDP was available to support the supply of high quality water to customers in these instances.

This highlights the importance of changing the current arrangements, to increase the availability and utilisation of SDP when valuable to do so.

4. Environmental sustainability is core to SDP's operations

SDP was developed and built to be environmentally sustainable. This was an essential component of the planning approvals for the plant, which included commitments to using 100% renewable energy, building high pressure water diffusers to successfully manage the salinity of water going back to the ocean and maintaining native ecology around the site.

SDP is powered by renewable electricity delivered under a foundation agreement with NSW's largest wind generator, the Capital Wind Farm. The agreement was included in SDP's planning approval and ensures that at any time the plant operates, regardless of drinking water output, all of the electricity needed for the production of desalinated water is offset by renewable electricity produced by the Capital Wind Farm.

World class environmental protection measures were implemented to manage the highly saline water (brine) produced through the filtration process. Academic studies into the effects of SDP on the marine ecology surrounding it have found that there has been minimal impact to the environment from the plant's brine discharge.¹ This has been possible to achieve through the long ocean out-take tunnels and high-pressure water diffusers that quickly dilute the salinity of the concentrated seawater that remains after the filtration process.

To protect the native flora and fauna surrounding the plant, SDP undertakes management of a 15-hectare conservation site that makes up about a third of plant land area. This involves continuous monitoring and management of the conservation site to ensure the resilience of the land and marine ecology as well as ongoing reporting to the NSW Environmental Protection Agency (EPA).

The initiatives listed above not only ensure that the existing SDP site remains environmentally sustainable, they would also apply to the expansion of the plant, as and when needed in the future.

¹ Clarke et. al., *First large-scale ecological impact study of desalination outfall reveals trade-offs in effects of hypersalinity and hydrodynamics*, Water Research, Volume 145, 15 November 2018, pp. 757-768. Joint research from the University of New South Wales and Southern Cross University.

SDP is a world leader in ensuring the environmental sustainability of desalinated water and we are making sure we maintain that position. SDP was recently awarded a 5-star rating and a score of 92 out of 100 on the GRESB Environmental, Social and Governance (ESG) benchmark, which aims to provide transparency and action on ESG across infrastructure and real estate assets.² We continue to monitor, assess, and improve our performance as environmental sustainability is core to our business.

5. Expanding SDP would improve water resilience

The Draft Strategy canvasses expansion of SDP to its original design capacity of 500ML per day (or up to 180GL per year). This doubling of capacity would bring Sydney into line with other major Australian cities in terms of rainfall independent supply. Expansion of SDP would rapidly and significantly increase Sydney's rainfall independent supply capacity and greatly enhance water security. An expansion of SDP is the efficient logical choice in the short to medium term for increasing Sydney's rainfall independent water supply.

The foundations of an expanded desalination plant have already been laid. Major assets including the seawater intake and outtake, as well as the delivery pipeline, have already been built to support an expanded plant. The land required was acquired as part of the existing site and the lengthy planning approval process has already been completed to cater for an expanded capacity.

The preparatory processes of seeking planning approvals and land acquisition alone would normally take three to five years to complete prior to contemplation of tender, design and construction activities.

The design and construction of seawater intake and outtake structures requires significant time and cost. These assets typically comprise up to 30% of total plant costs.³ In addition to this, the complexity involved in the design and construction of these assets means they are usually on the critical path during the development of desalination plants. Delivery pipelines which transport drinking water from desalination plants to existing water supply networks are also complex and costly to build because they typically need to cross significant distances (and multiple landowners) in order to connect to the existing supply network.

As illustrated through the points above, because the planning approvals, land, seawater intake and outtake structures, and the delivery pipeline have already been completed, the expansion of SDP could much more rapidly increase Sydney's rainfall independent water supply than a greenfield expansion of desalination capacity.

Expansion of the plant would provide greater volumes of water to supplement supply during drought. It would also provide much greater capacity to respond during public health emergencies and greater flexibility to undertake critical network maintenance activities as and when required. All of this would support the Draft Strategy to increase Greater Sydney's water supply resilience.

Expansion of the plant would use a proven technology, site and the experienced team that has a track record of providing high quality water, reliably to Sydney. The SDP team has also consistently met all service and water quality standards to the satisfaction of stakeholders including Sydney Water, NSW Health, the Independent Pricing and Regulatory Tribunal (IPART) under the Water Industry Competition Act (WICA), the EPA and the NSW Government.

² For more details, see <https://sydneydesal.com.au/caring-for-the-environment/>

³ See <https://www.advisian.com/en/global-perspectives/the-cost-of-desalination>, accessed 2 November 2021.

Beyond increasing Sydney's water supply resilience, expansion of SDP on the current site would provide other benefits to the NSW economy, assisting with the State's post-pandemic recovery. An expansion project would boost the use of renewable energy, either through a foundational agreement for the construction and supply of additional renewable generation in NSW or a long-term contract for renewable energy supply, supporting the NSW Government's renewable energy action plan. The construction of an expanded plant would create up to 1,200 new jobs for the community.

Under existing arrangements, SDP's current owners would fund the project's upfront costs, conserving NSW's budgetary resources with no cost impact on tax payers. After construction all future charges to water customers would be subject to independent price regulation by the State's economic regulator, IPART.

SDP is ready and able to work with all stakeholders as and when needed to increase water resilience through the expansion of the existing plant.