SOURCE

08 November 2021

Sydney Water
1 Smith Street
PARRAMATTA NSW 2150

Sent via email - [redacted]

Dear Sir/Madam,

SUBJECT: SOURCE GLOBAL SUBMISSION – GREATER SYDNEY WATER STRATEGY

Thank you for the opportunity to submit a comment on the Greater Sydney Water Strategy.

SOURCE Global PBC (SOURCE) supports the objectives and focus of the Greater Sydney Water Strategy, and strong ambitions to improve drought resilience, investment in rainfall independent supply, and attention to maintaining a high-quality drinking water supply while managing a challenging, flood and contamination prone network.

We wish to highlight the role that innovative water technologies, such as SOURCE Hydropanels, are currently playing around Australia by providing high quality, reliable, fit-for-purpose drinking water. Our completely off-grid solution is particularly suited to improving the quality and accessibility of drinking water in pockets of Greater Sydney not served by existing water infrastructure, or where the water supply is particularly prone to contamination events making it unsuitable for drinking.

We believe that the addition of innovative, climate independent water technologies to traditional water delivery infrastructure will enhance water reliability and safety, ensuring that the core Sydney Water aim of safe and reliable delivery of water to the Greater Sydney Region is met.

Thank you again for the opportunity to provide this comment. Should you have any questions or require further information, I can be contacted at [redacted] or on [redacted]. We would also welcome the opportunity to show you our Hydropanel sites in action and sample our drinking water.

Yours faithfully

[redacted]

Alex Polson
Director, Market Development Australia

1. DRINKING WATER IN THE GREATER SYDNEY REGION

The water strategies, technologies and policies of the 20th century have yielded remarkable success in providing reliable services to high density urban areas. The extensive Sydney Water network has been a quick adopter of new technologies such as desalination and has consistently encouraged homeowners to implement smart management to reduce strain on the overall network such as water efficient technologies and rainwater tanks.[1]

The high quality of water in the Greater Sydney network is commendable, however as the Greater Sydney Water Strategy (*The Strategy*) notes the network is vulnerable to flooding events, increased climate uncertainty and additional treatment demands that can make treatment to consumer drinking water expectations challenging.[2] This challenge is compounded by the low proportion of rainfall in some parts of the network and changing demands.[3]

SOURCE Global's innovative Hydropanel technology is powered by renewable technologies, is completely off-grid, and is independent of rainfall supply creating high-quality drinking water that could bolster household supplies and reduce overall reliance on the existing Sydney Water network for high-quality drinking water.

This submission will introduce you to our technology and highlight potential areas of collaboration, noting Sydney Water's desire to improve and increase investment in rainfall independent supplies.[4]

2. SOURCE HYDROPANELS – INNOVATIVE TECHNOLOGY, SERVING REMOTE AUSTRALIA

SOURCE Global is the manufacturer of SOURCE Hydropanels. This Referral comment is submitted by SOURCE to provide context for the use case of Hydropanels and similar technologies alongside traditional water delivery infrastructure. SOURCE aims to collaborate with utility providers to ensure that the needs and expectations of their customers can be met.

SOURCE sees an opportunity for collaboration with Sydney Water in three key areas:

1. As a **quick-to-implement service provision for drinking water in areas that are challenging to service with traditional infrastructure or have existing water quality challenges**. Hydropanel technology could be leveraged for customers with no existing water supply, or where the water supply is adequate for household use, but does not meet customer expectations for drinking water;

2. As a **rainfall independent drinking water delivery technology that can offset network supply and provide consumer confidence even in times of drought**. Installation of Hydropanels could mirror existing programs and advice around the installation of rainwater tanks; and

3. **Improving sustainability by reducing community reliance on plastic bottled water in times of contamination or drought**.

SOURCE uses a combination of solar energy and materials science to extract pure water vapour from the air and convert it into the highest-quality water, ready for immediate consumption. The water then flows into a reservoir where it is mineralised before being delivered to a tap or dispenser. A standard array - two Hydropanels - has a storage capacity of 60 litres or 120 standard water bottles. Arrays can be scaled to community size, with larger installations providing millions of litres each year to a centralised storage tank and dispenser.

Attachment A explains how the individual Hydropanels work. The Hydropanels are completely scalable,

[1] Sydney Water Rainwater Tank, Consumer Information Page (https://www.sydneywater.com.au/your-home/saving-water-at-home/rainwater-tanks.html)
[2] Sydney Water, Draft Greater Sydney Water Strategy, October 2021, pg 36.
[3] Ibid. pg 34
[4] Ibid. pg 39

meaning they can be installed on-roof to supply enough water for a family, or can service entire small communities.

SOURCE is a proven technology partner and provides water resilience technology in over 53 countries around the world through a range of Government, corporate and NGO partners. We have also partnered with the NSW Department of Education, the NSW Aboriginal Housing Office, regional councils, and Indigenous communities within Australia, delivering over 1000 individual install sites. ***Attachment B*** provides a map of installations across Australia, and ***Attachment C*** details four installation case studies.

3. RAINFALL AND TREATMENT INDEPENDENT TECHNOLOGIES FOR UNDERSERVED OR CONTAMINATION AND RAINFALL VULNERABLE COMMUNITIES

Sydney Water's large network spans high-density urban environments in the middle of the Sydney CBD, as well as harder to access areas in the Hawkesbury-Nepean Valley and Western Sydney, which The Strategy notes are particularly vulnerable to flooding related contamination.[5] Additionally, the provisioning of Hydropanels to potential Sydney Water customers could help bring limited-service customers a greater service offering, and assist the entire network in becoming less reliant on water treatment which The Strategy notes is sometimes demand constrained.[6]

The exploration of alternative sources of water including recycled water demonstrates the necessity of considering fit-for-purpose water provisioning in urban environments.[7] While most water delivered by Sydney Water is of high-quality drinking water standard it could be preferable to begin providing distinct sources of water for general household use, gardening, and drinking water. The approach of offsetting network reliance by using alternative delivery/supply methods is well tested, with Sydney Water advocating for consumer usage of rainwater tanks for water storage. Hydropanels could deliver similar benefits while improving quality, confidence, and reliability as a rainfall-independent drinking water supply.

The installation of off-grid, quick-to-implement water creation technologies would help ensure that communities are able to maintain high-quality drinking water access even as infrastructure work is carried out, rainfall is reduced, or contamination events occur.

4. INCREASED SUSTAINABILITY AND A REDUCTION IN PLASTIC USE

When network supplied drinking water becomes contaminated or unpalatable to consumers, household reliance on plastic bottled water increases significantly. Contamination events such as flooding, or additional demand on treatment facilities may mean that network water may be adequate for general household use, but not for drinking water. In this situation consumers could be forced to pay $1+ per litre of plastic-bottled drinking water, with small councils in affected areas then required to manage excessive and avoidable plastics in landfill. The installation of Hydropanels in local communities could save a household of 4 ~$3,212 each year,[8] with each individual panel offsetting 54,750 PET bottles over its lifetime.[9]

The environmental considerations of bottled water should also be considered. While PET bottles can be recycled, less than 12% of recyclable plastic waste is collected and reused in Australia each year.[10] This means that the vast majority ends up in landfill, which negatively impacts delicate ecosystems in local communities.

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[5] Ibid. pg 36
[6] Ibid. pg 39
[7] Ibid. pg 17
[8] Based on daily consumption of 2L per person, and a SOURCE water cost of $0.15/L of water, compared to store cost of $1.25/L.
[9] Lifetime of 15 years per panel; calculated per 500mL plastic bottle.
[10] Statista, "Australia Recycling Rate of Plastic", 2020 (via: https://www.statista.com/statistics/881641/australia-recycling-rate-of-plastic/#:~:text=In%20financial%20year%202019%2C%20the,amounted%20to%20around%209.4%20percent)

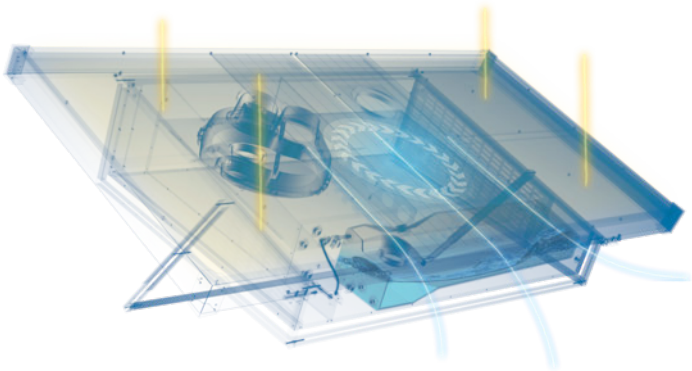
HOW DOES SOURCE WORK?

1 Using solar PV, SOURCE takes in ambient air via fans & collects water vapor from that air onto a hygroscopic material

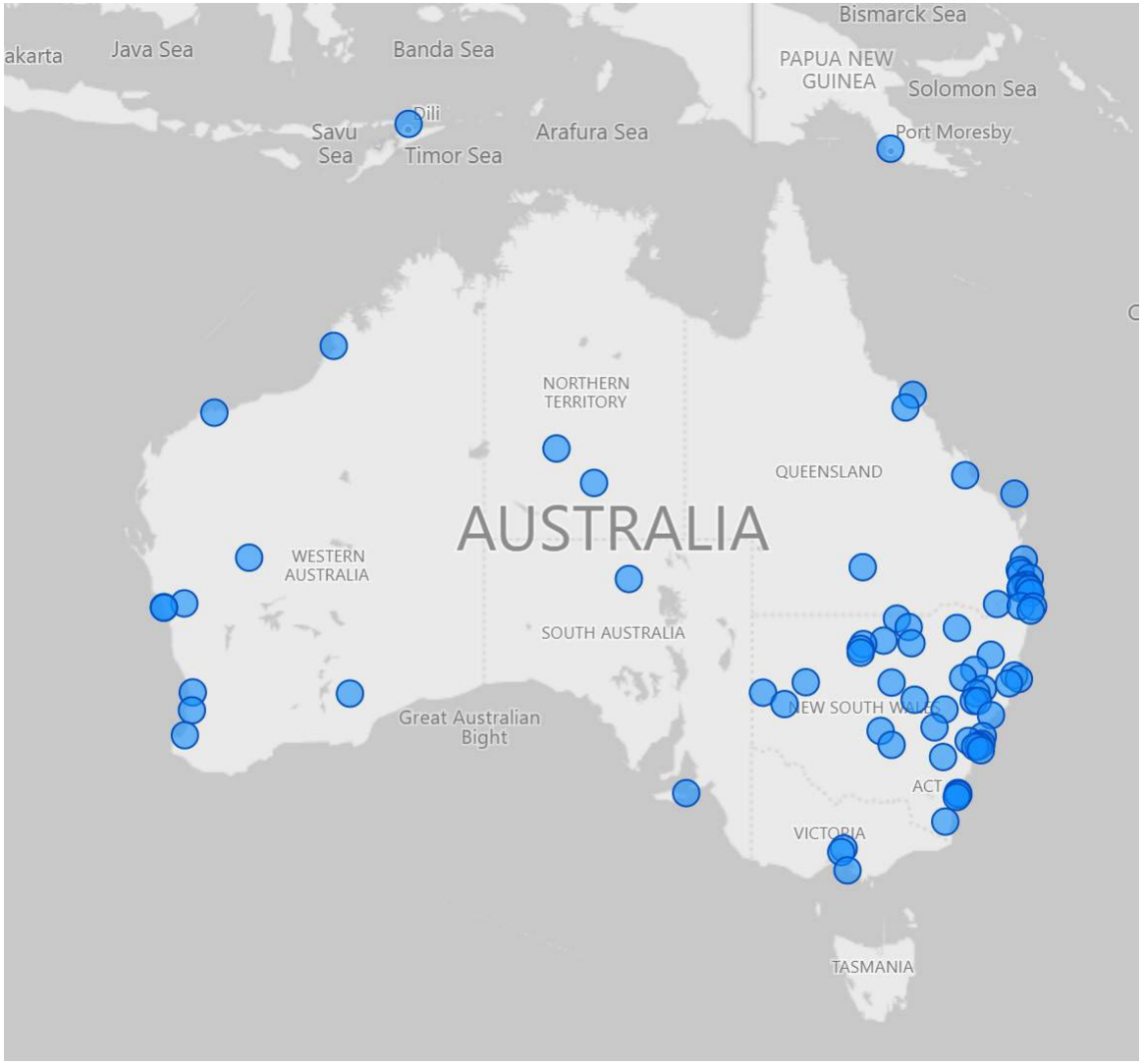
2 With heat from the sun, SOURCE converts water vapor collected into liquid water, made pure

3 The pure water is mineralized with magnesium & calcium to achieve an ideal taste profile

4 Sensors in each Hydropanel array monitor & optimize the water to maintain quality



ATTACHMENT B: AUSTRALIAN SOURCE LOCATIONS



ATTACHMENT C: EXAMPLE INSTALLATIONS

NSW ABORIGINAL HOUSING OFFICE (WESTERN NSW)

The Hydropanel Program is an initiative of the NSW Aboriginal Housing Office (AHO) that saw the installation of over 900 hydropanels to AHO and community- owned properties in remote, drought-affected areas within NSW. The Program focused on producing clean, reliable, free drinking water for tenants winning the 2019 Premiers Award for public service innovative public service spend.

From January 2017 to December 2019, rainfall was the lowest on record. All major inland river systems in NSW were in critical or severe drought. As a result, there was no drinking water available in large areas of Western and Central Western NSW. Councils struggled to deploy necessary infrastructure to deliver portable drinking water to their residents. In some towns, bores were sunk to supply the townships with water. Many locals, however, found the bore water unpalatable due to its high sodium content. Testing has been reported to show the sodium levels of bore water were as high as 353 milligram per litre, above the rate (180mg/L) recommended by Australian Drinking Water Guidelines. Without drinking water at their homes, low-income families' only hydration options were expensive bottled water or unhealthy sugary drinks.

MURRURUNDI PUBLIC SCHOOL (UPPER HUNTER NSW)

Murrurundi has been hard hit by the drought. Struggling with a low water supply, the town needed a solution that would provide community members with drinking water security.

Three Blue Ducks, a sustainably minded farm to table restaurant, committed to supporting the town of Murrurundi by donating 10 SOURCE Hydropanels to Murrurundi Primary School. Now the students, parents, and community members have continuous access to reliable, high-quality drinking water.

Similar installations have also been funded by the New South Wales Department of Education in 10 separate public schools throughout the State.

BUTTAH WINDEE COMMUNITY (MEEKATHARRA WA)

Faced with uranium-contaminated water for the past 10 years, residents of this remote town had extremely limited water-supply options given the health consequences.

With funding provided by a number of Perth based businesses, the community members now no longer face the negative health effects caused by prolonged ingestion of high levels of uranium.

ABORIGINAL REMOTE COMMUNITIES (AUSTRALIA WIDE)

Patty Mills, NBA player and one of Australia's leading sportspeople, was determined to bring a renewable supply of clean drinking water to drought-stressed areas of remote Indigenous Australia.

Throughout his basketball career, Mills has been dedicated to honoring his Aboriginal culture, and founded The Community Water Project to enable remote communities to overcome water stress. With the support of the National Basketball Players Association and Australian Indigenous Basketball, The Community Water Project installed SOURCE Hydropanel arrays in six remote Australian communities, including Wilcannia (NSW), Walgett (NSW), Cunnamulla (QLD), Oodnadatta (SA), Black Tank (NT), and Dampier Peninsula (WA).

Commenting on the Wilcannia installation, a community elder said, *"Over the past 5 years there has been virtually no water in the Darling River, and the water that is left is poisonous. The Hydropanels donated to us provide 900 litres of water each month. It really makes a big difference to the lives of our elders and our young families."*