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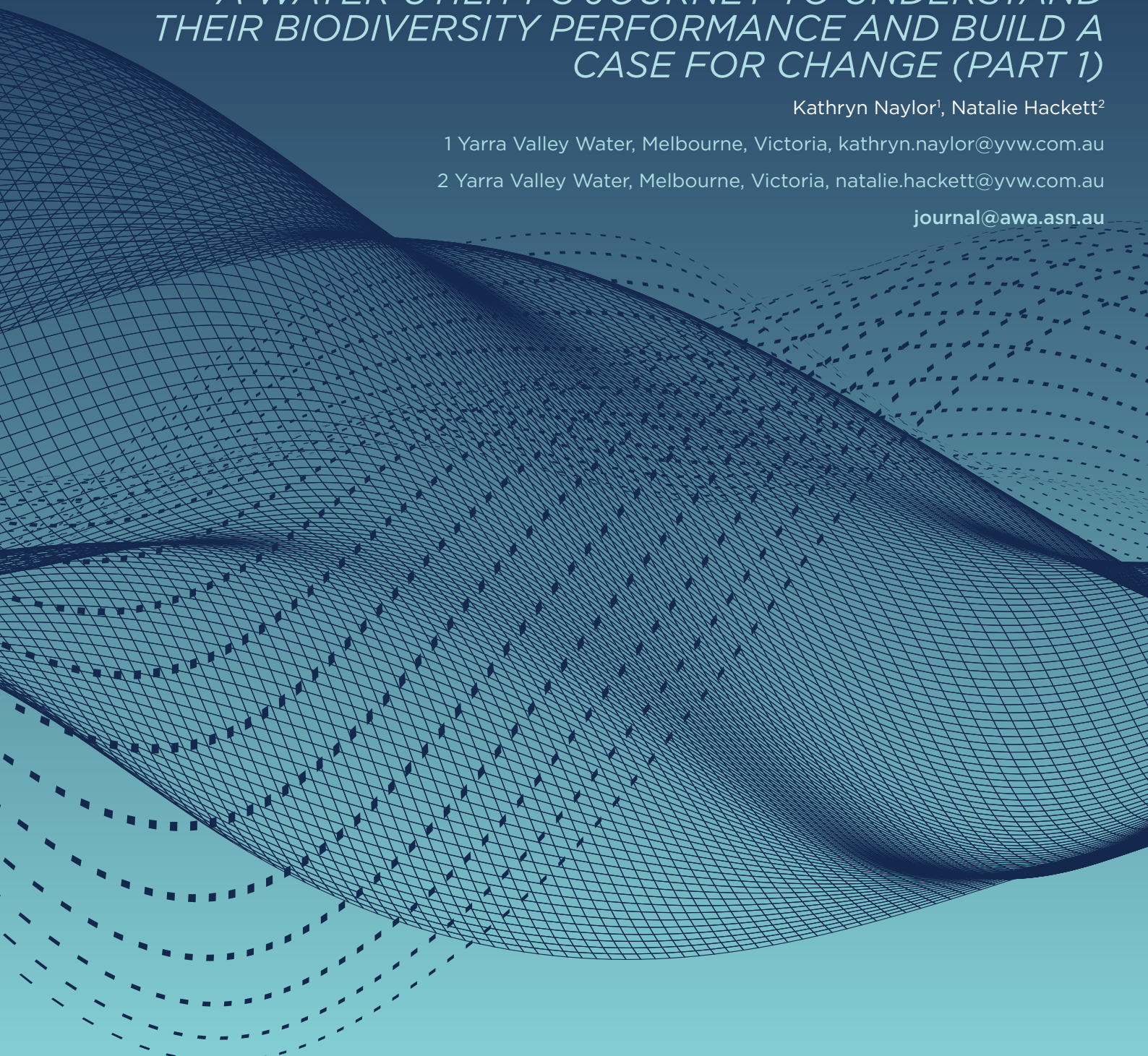
NATURE POSITIVE – OPPORTUNITIES FOR UTILITIES *A WATER UTILITY'S JOURNEY TO UNDERSTAND THEIR BIODIVERSITY PERFORMANCE AND BUILD A CASE FOR CHANGE (PART 1)*

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Nature Positive – Opportunities for utilities

A water utility's journey to understand their biodiversity performance and build a case for change (Part 1)

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ABSTRACT

The health of our communities and livelihoods are dependent on the health of the natural world. However, biodiversity is declining faster than at any time in human history. Biodiversity loss is now recognised as one of the top five global risks to society. Nature conservation has transitioned from a corporate social responsibility issue to a core strategic risk management issue alongside climate change.

The Biodiversity Plan sets clear global targets for the sustainable use, restoration, and conservation of biodiversity by 2030, including disclosure of biodiversity impacts. It also acknowledges First Nations people as key partners in biodiversity conservation. The Australian Government has responded with a Nature Positive Plan, including new legislation and a national voluntary biodiversity market.

This leads to implications for Australian utilities to understand their biodiversity performance. Yarra Valley Water have embarked on a journey to understand their nature-related impacts, dependencies and opportunities, their customer expectations, and how they could respond to these both on their own land and across their operations and supply chain. Here we report on this process and identify significant opportunities for utilities to meet local and global biodiversity restoration needs in addition to operational requirements.

INTRODUCTION

'Humanity is waging a war on nature. This is suicidal. Making peace with nature is the defining task of the 21st century. It must be the top, top priority of everyone, everywhere.'
UN Secretary General Antonio Guterres, December 2020.

The health of our communities and livelihoods are dependent on the health of the natural world (Dasgupta, 2021). However, our natural world is facing two momentous and related challenges – climate change and biodiversity loss. As stated by the UN: 'For many years the climate crisis and the biodiversity crisis have been treated as separate issues, but the reality is that there is no viable route to limiting global warming to 1.5°C without urgently protecting and restoring nature' (Mrema, 2022). The biosphere is being altered to an unparalleled degree across all spatial scales and biodiversity is declining faster than at any time in human history. 75% of the land surface is significantly altered, 66% of the ocean area is experiencing increasing cumulative impacts, and over 85% of wetland area has been lost (IPBES, 2019).

Australia holds an unenviable conservation record: it is the fourth-worst country in the world for species extinctions and in the top three for critically endangered animals (OECD, 2022). Since colonisation by Europeans in 1788, there are now over one hundred of Australia's native species listed

as extinct or extinct in the wild (Woinarski et al, 2019). In 2020 biodiversity loss was recognised by the World Economic Forum as one of the top five global risks to society; we are reaching irreversible tipping points for nature and climate, and over half of the global GDP (\$44 trillion) is potentially threatened by nature loss (WEF, 2020). Nature conservation has transitioned from a corporate social responsibility issue to a core strategic risk management issue alongside climate change (TNFD, 2023).

This topic is particularly relevant to water utilities, as water management and use is listed by the World Economic Forum as one of the top 10 threats to biodiversity, impacting approximately 3,000 threatened or near-threatened species. They list 'planet-compatible urban utilities' as a critical transition and call for an 'unprecedented shift in how our built environment is designed, built, constructed, serviced and connected' (WEF, 2020). This leads to several implications for utilities in understanding their biodiversity impacts, building a case for change, and considering parallel goals for restoring biodiversity to complement zero carbon goals.

The policy imperative for this change has been established by *The Biodiversity Plan: For Life on Earth* (formerly known as the Kunming-Montreal Global Biodiversity Framework). This sets clear goals and targets for the sustainable use, restoration, and conservation of biodiversity by 2030, including new targets in relation to business monitoring and disclosure of biodiversity impacts. It was adopted by 188 countries including Australia in 2022 (UN COBD, 2022). The term 'Nature-positive' is closely aligned with the goals of *The Biodiversity Plan* and refers to the concept of reversing the destruction of nature by 2030 with a full recovery of a resilient biosphere by 2050 (Locke et al., 2020).

In addition to these global targets, the Australian Government has also committed to a target of zero new extinctions. This will be delivered under its Nature Positive Plan, which includes additional environmental legislation to be introduced along with a national biodiversity market through the Nature Repair Market Bill and a Nature Positive Summit planned for October 2024 (DCCEE, 2022).

It is expected that biodiversity loss will follow a similar global trajectory to that of climate change, however at a much quicker pace. In England, new planning permissions must deliver at least 10% biodiversity net gain (DEFRA, 2023). English water utilities are required by their regulator to assess baseline biodiversity on their land and consider their contribution to national biodiversity targets (Ofwat, 2022). In New South Wales, an independent review of the Biodiversity Conservation Act 2016 recommended that Nature Positive become 'mandatory' (Henry, 2023). A legal opinion commissioned by the Commonwealth Climate and Law Initiative made it clear that Australian company directors have a duty to consider their company's exposure to nature-related risks (Hartford-Davis and Bush, 2023).

In parallel to these policy processes, frameworks are emerging that support businesses to understand and reduce their impacts on biodiversity, including the Taskforce for Nature-related Financial Disclosures (TNFD) and the Science-Based Targets for Nature (SBTN). Life Cycle Assessment methodology is emerging within this suite of tools as a method for understanding the impacts, risks, and dependencies of organisations on biodiversity (Damiani et al, 2023).

It is also important to recognise that the global challenge of reversing nature loss can benefit significantly from the knowledge of First Nations people, and the Global Biodiversity Framework acknowledges First Nations people as key partners in biodiversity restoration (TNFD, 2023).

In short, there are numerous reasons for water utilities to consider their biodiversity impacts including the urgent global context, the political and impending regulatory imperatives, growing customer expectations, and emerging supporting tools. Additionally, there is potential for positive co-benefits from habitat restoration and partnership with First Nations people. Utilities can play a significant role in reducing negative impacts and restoring biodiversity by increasing the value they provide from land management approaches, construction practices, asset operations and supply chain management to meet local and global needs in addition to operational requirements.

METHODOLOGY

The ability of Yarra Valley Water (YVW) to assess their biodiversity performance and build a case for change was built on a series of fundamental questions. These included understanding their nature-related impacts, dependencies, and opportunities; understanding customer expectations; and understanding how they could respond to these, initially on their own land and subsequently across their operations and supply chains. An overview of this methodology is shown in Figure 1.

The journey commenced when the utility was developing their 2030 corporate strategy. It became apparent that over this period our society would need to address considerable environmental

challenges, which presented both a core strategic risk and opportunity. The utility also recognised the extent it could learn from its First Nations people. Accordingly, the strategy included an overarching principle of ‘Honouring and Healing Country’ and created a new key outcome area defined as ‘Healthy ecosystems’. The Board endorsed the utility’s strategy, and this framing was foundational in facilitating all the following activities to be implemented (refer Figure 2 on page 5).

Note this article will focus on Part I, the utility’s work in restoring its landholdings. Part II, the subsequent integration of operational and supply chain impacts will be covered in a technical companion paper.

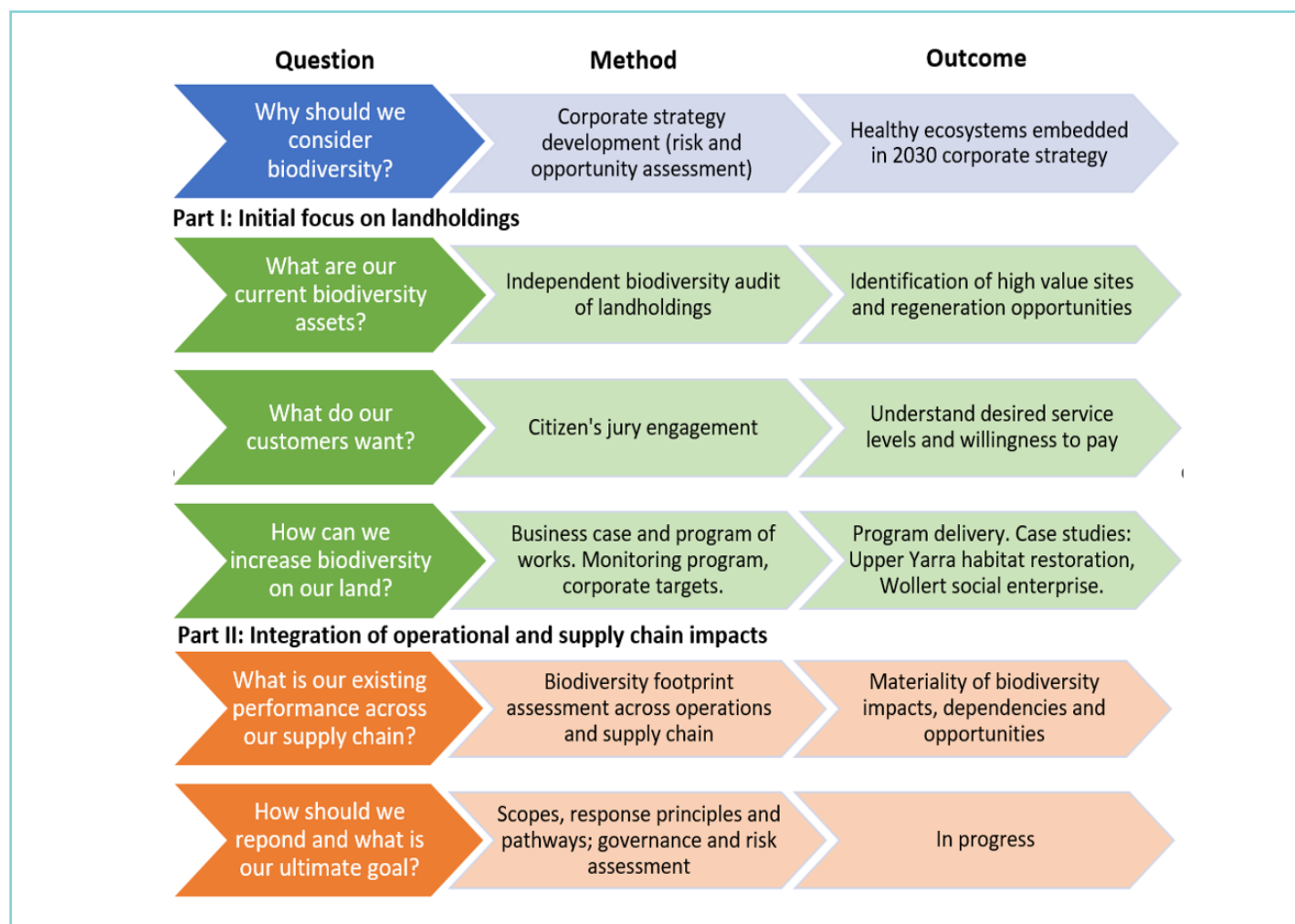


Figure 1: Overview of methodology (Source: YVW)

METHOD

What are the utility's current biodiversity assets?

Having agreed to the strategic outcome of healthy ecosystems, a decision was made to focus initially on the utility's own landholdings. Nature Glenelg Trust were engaged to undertake a biodiversity audit of the 1527Ha owned by the utility.

The first phase was data collection and included previous ecological assessments, aerial imagery and LiDAR data along with Victorian Government datasets on Ecological Vegetation Classes, adjacent land usage and flora and fauna species. Anecdotal information was also sought from community groups, neighbours, site operators, grounds contractors and Traditional Custodians.

In the second phase all 190 sites were categorised by biodiversity value using the collated data. In the third phase field visits were undertaken at 38 of the highest value sites, to validate the desktop assessment and identify potential management actions and restoration opportunities.

The fourth phase of the audit was staff workshops, to share findings and seek further insights including other significant values, potential partnerships, upcoming pressures and future works to assist with prioritisation.

The final phase was a comprehensive report

documenting the audit and recommendations, including management strategies for each of the high priority sites (refer Figure 3).

What do the utility's customers want?

After the opportunities were more clearly understood, Marsden Jacobs was engaged to carry out a willingness to pay study as part of the utility's 2022 Price Submission process. The Partial Profile Discrete Choice Experiment method was used. Customers were informed how the utility currently managed their buffer land, and of the opportunity to manage this land in a way that allows regeneration of native flora and protection of endangered wildlife. They were then presented with a range of alternative service and cost options to choose between. 945 customers participated, including a targeted group of financially vulnerable customers (Marsden Jacobs, 2022).

How could the utility increase biodiversity on their land?

With defined customer support, the utility was then able to develop a business case for a works program to meet the increased service level requested. Additional lines of evidence included the increased legislative responsibilities on utilities in Victoria, contributions to state and national biodiversity targets, and findings of the Victorian Auditor-General's Office (2021), State Parliament inquiry into Victoria's ecosystem decline (2021) and State of the Environment Report (2021).



Figure 2: Yarra Valley Water's 2030 Strategy (Source: YVW)

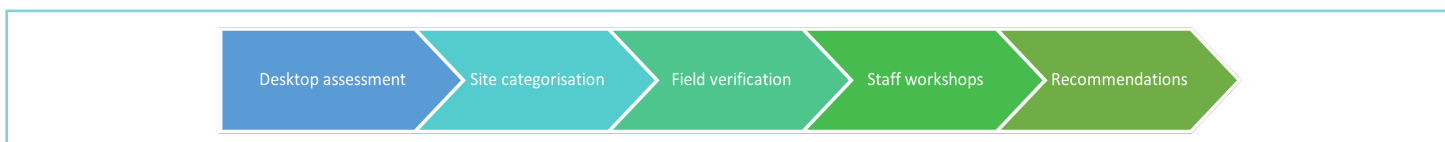


Figure 3: Biodiversity audit process (Source: YVW)

RESULTS

What are the utility's current biodiversity assets?

The audit identified that a subset of the utility's properties have significant biodiversity values, including remnant woodland, native grasslands, rock outcrops, 26km of watercourses and constructed habitat such as treatment ponds. 151 flora species were recorded, including 7 state or nationally threatened species. 161 fauna species were also recorded, including 34 state or nationally threatened species. Most threatened fauna were waterbirds who use waterbodies at treatment plant sites (76%); other species included Powerful Owl, Growling Grass Frog and Eltham Copper Butterfly. Overall, the audit highlighted twelve sites with high remnant biodiversity values that were recommended to be maintained to a higher standard. It also identified the top ten restoration opportunities on the utility's land, the majority of

which were sewage treatment plants sites due to the extensive buffer land, availability of recycled water and current regime of cattle grazing.

What do the utility's customers want?

The Choice Experiment study showed clear evidence of a strong willingness to pay for the protection of biodiversity and endangered species on the utility's land. Both weighted average and financially vulnerable customers indicated they were willing to pay an increasing additional cost for these services, as shown in Figure 4.

A Citizen's Jury process was also conducted alongside this work. A key outcome area proposed was 'Preserving and protecting our environment', along with an accompanying strategic measure 'Hectares of land we actively manage to preserve and restore biodiversity and natural habitats'. (Mosaic Lab, 2022).

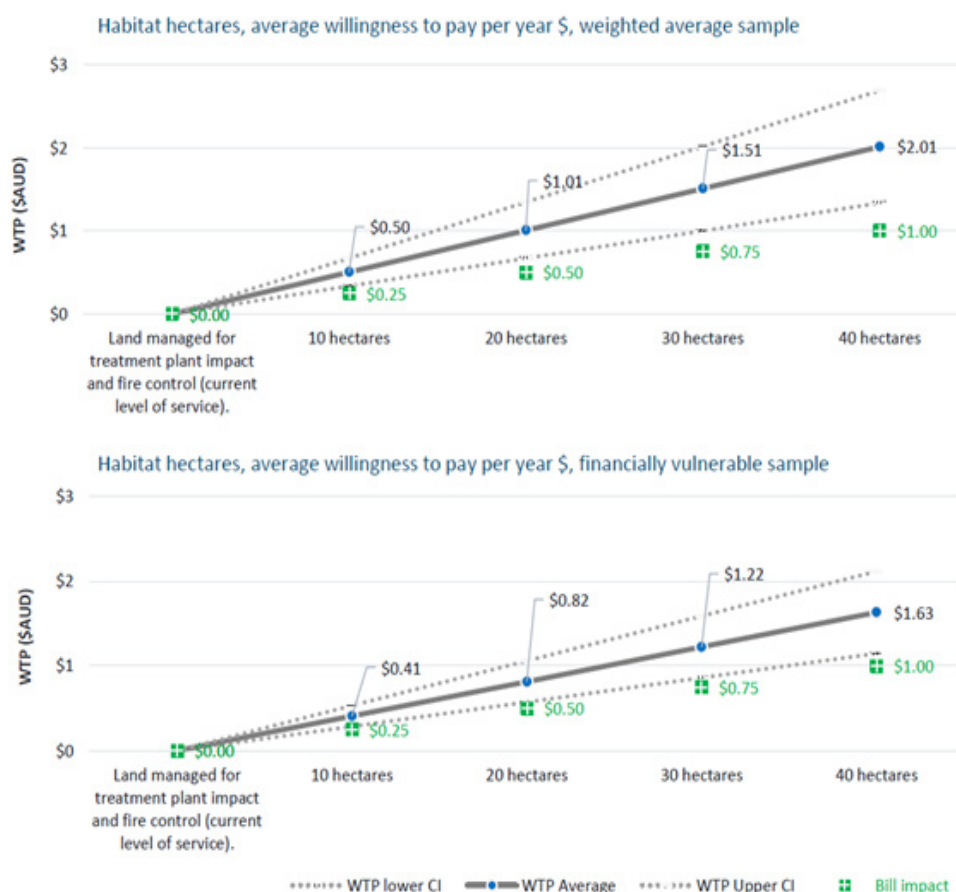


Figure 4: Customer willingness to pay for the protection of biodiversity and endangered species (Source: Marsden Jacobs, 2022)

How could the utility increase biodiversity on their land?

A remnant vegetation management program was established (based on the audit recommendations) with rolling corporate targets to ensure all high value sites were cared for at the appropriate service level. A Biodiversity Officer role was created to manage this process and embed this knowledge within the utility's overall land management approach.

In addition, three large-scale restoration projects were prioritised during this regulatory period, based on the audit outcomes, community and Traditional Custodian priorities and other planned works. Case study details of the first two restoration projects that have commenced are included in the following section. Partnerships were also developed for smaller scale restoration works on the utility's land, including Melbourne Water waterways grants for properties with creek frontages, a partnership with Nillumbik Council to restore habitat for the Eltham Copper Butterfly, grassland restoration at the Lilydale Sewage Treatment Plant for Tawny Grassbird breeding and a partnership with Mount Lilydale Mercy College to establish an outdoor nature classroom.

An Environmental DNA (eDNA) testing program commenced in 2023 to establish baselines at key sites that will underpin the evaluation of the works. These methods capture, extract and analyse genetic material shed into water, air and soil by plants, animals and other organisms. They provide a fast

way, cost-effective way to detect species without directly observing organisms (De Brauer et al, 2022).

In total a program of works for 47Ha of the utility's land across 14 key sites was proposed to be managed for protection and enhancement of biodiversity outcomes over the 2023-28 regulatory period, noting that grant funding from partners would need to be sought to enable the full envisioned outcomes.

Case study 1 - Upper Yarra Habitat Restoration

Victoria has two State Faunal Emblems, the Helmeted Honeyeater and lowland Leadbeater's Possum, and both are critically endangered. At present, there are less than 40 lowland Leadbeater's Possums and 200 Helmeted Honeyeaters left in the wild (Harley, 2023 a). The key impediment to recovering populations is the lack of high-quality swamp forest due to historic clearing for agriculture (Greet, J et al, 2021). Therefore, creating suitable habitat locations is essential for their survival (Harley, 2023 b). Uniquely, YVW has an opportunity to influence the future survival of both species.

YVW are restoring habitat specific to these species at their Upper Yarra Sewage Treatment Plant site, in partnership with Zoos Victoria, Greening Australia, Wurundjeri Woi wurrung, Melbourne Water, Jacobs and Spiire. The treatment plant site is located at Launching Place, 54km east of Melbourne. Over half



Figure 5: Lowland Leadbeater's Possum (*Gymnobelideus leadbeateri*, Source S. Kuiter) and Helmeted Honeyeater (*Lichenostomus melanops cassidix*, Source M. Serong)

of the site is located on the flood plain of the Yarra River (Birrarung), once part of a vast swamp forest spanning from the Yarra Valley down to The Great Swamp in Koo Wee Rup and the traditional home of these two species.

The species require highly specific habitat conditions, and the restoration involves planting over 170,000 native plants across 35Ha of the site spanning various Ecological Vegetation Classes that form part of this habitat type. These plant species will provide essential resources for the establishment of the Helmeted Honeyeater and lowland Leadbeater's Possum, and sufficient area to support self-sustaining populations of both.

An important feature is the connectivity to Mt Toolebewong and the Yarra River (Birrarung), extending the available habitat corridor, and the proximity to other critical habitat restoration sites including Haining Farm and Yellingbo Nature Conservation Reserve. The Upper Yarra STP will form part of the Liwik Barring Landscape Conservation Area, which encompasses over 3000 hectares of public land reserves and crown land water frontages throughout the Yarra.

The availability of recycled water is an important feature, providing greater resilience to sustained dry periods. The creation of additional wetlands will also achieve operational benefits for YVW, through improvements to the quality of the discharge to the Yarra River (Birrarung). In addition, the habitat creation will reduce YVW's carbon footprint, with estimated average carbon sequestration yields of 13,940 credits (Canopy, 2023).

Initially the project objective was singular, to establish a new home for the two species by restoring habitat and floodplain hydrology. Taking a partnership approach with Wurundjeri (and considering YVW's guiding principle to Honour and Heal Country through all aspects of the restoration) has enabled a complementary objective to emerge, to support culturally valued features of the land and waterways alongside the recovery of the two (totemic) species. These included the importance of protecting the Birrarung and restoring Manna Gum (*Eucalyptus viminalis*) within the habitat, as well as the importance of safeguarding and nurturing all species through the restoration of the site. Note the Wurundjeri people's name is derived from the Woi-wurrung language words 'wurun' and 'djeri' — where 'wurun' referred to the Manna

Gum itself, and 'djeri', the name of a grub found on Manna Gums (Wurundjeri Corporation, 2024). This partnership provides the Wurundjeri Woi-wurrung people with long-term, meaningful access to Country and opportunities to restore culturally important species, while creating a new shared history between the Wurundjeri Woi-wurrung people, YVW, and the wider community.

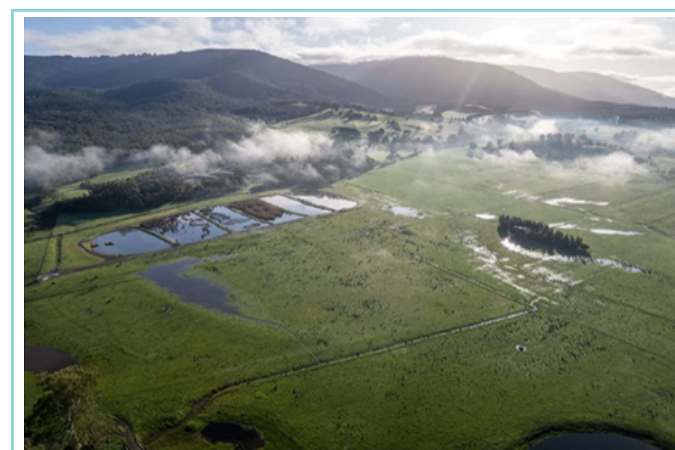


Figure 6: Aerial image of Upper Yarra Treatment Plant

Case Study 2 - Wollert Conservation Social Enterprise

Yarra Valley Water are partnering with Whittlesea Community Connections and Melbourne Polytechnic to create the Wollert Community Farm at their Aurora Sewage Treatment Plant. The development is a place for the community to connect, learn and prosper through environmental and agricultural activities.

Over the past decade, 33% of humanitarian arrivals to Victoria have settled in the municipalities of Whittlesea and Hume where YVW's Aurora site is located (VRHN, 2022). Whittlesea Community Connections has extensive experience in providing pathways from hardship to opportunity for these people. The farm will expand their services by incorporating a social enterprise indigenous plant and seed nursery to provide employment pathways and meet a high demand for indigenous seedlings in the rapidly developing Northern Growth Corridor. It will also incorporate food seedlings both commercially and for the nearby Whittlesea Food Collective, which provides food, material aid and support services to vulnerable community members.

In conjunction, the farm will provide practical experience for students completing Commonwealth-supported TAFE programs in conservation and regenerative agriculture, school-based traineeships, and Learn Local courses that will be run by Melbourne Polytechnic.

The farm will also enhance cultural and natural heritage. Following an extensive Cultural Values Study undertaken in partnership with Wurundjeri Woi-wurrung, YVW is working with their Narrap Rangers Land Management Unit to rehabilitate key areas of the 167Ha site. This includes ongoing cultural burning to restore endangered Plains Grassy Woodland areas. Collaborative partner activities including Mini and Junior Indigenous Rangers Programs will revegetate further significant biodiversity areas to support the vulnerable Curly Sedge and endangered Growling Grass Frog, and reintroduce key species into the adjacent Galgi Ngarrk grasslands. An indigenous trail is currently undergoing planning for the site.

There are a wide range of other benefits including recycled water use, increased employment and regional economic benefits. In recognition of this, DEECA and the City of Whittlesea have also contributed to the planning and construction costs. GIST Impact have calculated a social return on investment of approximately \$6 for every dollar invested after 10 years, and approximately \$10 for every dollar invested after 20 years, with the highest benefits coming from training and employment followed by biodiversity restoration (GIST Impact, 2022).



Figure 7: Artist's impression of the Wollert Community Farm (Source: Belvedere 3D)

DISCUSSION

An important factor in the journey detailed here has been the strong support of the utility's Executive team and Board. The utility has existing corporate targets for the number of hectares of land they are actively managing for biodiversity outcomes, and if they don't meet these targets they have committed to return \$1.5M to their customer base each year. There is potential to broaden this metric over time to incorporate operational and supply chain impacts, which will encompass more broadly the organisation's progress towards the desired Healthy Ecosystem outcomes.

When considering restorative actions these will necessarily require a 'place-based approach'. 'Place-based' approaches target the specific circumstances of an area and engage local people as active participants in development and implementation. A central consideration is that different people value different things about places. Consequently, for an opportunity to be 'place-based', it must engage with those diverse perspectives and values as well as consider who might be there in future (Victorian Government, 2023). This will mean that solutions are novel to each site, so while case studies are given here as inspiration, each utility will have their own unique situations to address and partnerships to form when considering the additional value their buffer land or operational changes can provide. Clearly these opportunities require shared decision making, so the strength of partnerships and co-governance/funding arrangements are vital to the success of these projects. One model used by these case studies has been the Partnership Brokering methodology (Partnership Brokers Association, 2019) to enable early identification and resolution of staging, finance and governance concerns. Various water industry biodiversity networks also exist to support utilities to leverage each other's progress for the overall benefit of their communities.

Another key learning was the profound benefits that can emerge from genuine partnerships with Traditional Custodians. By transcending mere legal obligations and embracing meaningful engagement, a wealth of outcomes that enrich both communities and the environment can be achieved. This perspective underscores the interconnectedness of culture and environmental stewardship, which together guide a more sustainable approach to restoration.

CONCLUSIONS

In summary, there are several significant reasons for water utilities to consider their biodiversity impacts including the urgent global context, the political and impending regulatory imperatives, growing customer expectations, emerging supporting tools and the opportunity for positive co-benefits resulting from habitat restoration and partnerships with First Nations people.

Utilities can play an important role in reducing negative impacts and restoring biodiversity by increasing the value they provide from land management. The case studies given here combine buffer land, recycled water, agencies willing to partner and customers willing to pay to protect and restore habitat for endangered plants and animals. These resources are not unique and there is a clear opportunity for many utilities to protect remnant vegetation and restore biodiversity on their land, guided by the needs of that place, and seek complementary uses in addition to operational requirements that contribute to reversing biodiversity loss. These will be most powerful when linked with regional actions and partners.

Utilities can also play an important role by considering their biodiversity impacts from asset operations and supply chain management. A subsequent technical companion article will cover the integration of these impacts in the case study utility's overall assessment of their biodiversity performance.

If we can progress these challenges and transition to 'planet-compatible urban utilities', the water industry will have made a significant contribution to the 'defining task of the 21st century'.

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Kathryn co-manages the Environment and Community Resilience team at Yarra Valley Water. Her role covers long-term strategy including climate resilience, circular economy and regenerative land use. She has 18 years' experience in the water industry across regional master planning, urban corridor revitalisation, recycled water strategy, renewable oil production, water and sanitation and mechanical design engineering.



Natalie Hackett

With over 20 years' experience in the water industry, and a passion for harnessing the multifaceted potential of wastewater treatment plants, Natalie Hackett, Senior Engineer of Yarra Valley Water's Environment and Community Resilience team, is advancing the global sustainability agenda by embedding complementary and synergistic land uses at YVW's Wastewater Facilities.

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