

# Greening of public open space

Economic Values in IWM Evaluation – Last update December 2021

*Economic Values in IWM evaluation factsheets* provide planners with guidance on the selection of values for estimating the economic value of benefits from integrated water management (IWM) projects. The economic values in the Fact Sheets have been chosen so they are directly relevant to investments in the Greater Melbourne area.

These economic values can be used to establish high-level estimates of the potential benefits of proposed IWM and blue-green infrastructure investments. You can then use these high-level benefit estimates in economic analyses, including cost-benefit analysis.

The factsheets are a joint initiative by Melbourne Water, Greater Western Water, South East Water and Yarra Valley Water for consistency in collaborative IWM investment evaluation.

## Assessing the economic benefit of greening public open space

Integrated Water Management (IWM) projects often replace potable water with an alternative water solution, recycled water, rainwater or treated stormwater. When water is used in public open space (POS) these projects can result in more amenable and accessible green space and natural environment in two different scenarios:

- 1. Green space is currently not irrigated:** If the green POS is not irrigated in the base case, it is assumed that adding an alternative water irrigation solution will lead to a higher perceived quality of green POS in dry years. It includes the creation of new green POS.
- 2. Green space is currently irrigated by potable water:** If the green POS is irrigated in the base case, it is assumed that the alternative water irrigation solution will lead to a higher perceived quality of green space in times of water restrictions (may also depend on council policy), but no change when no water restrictions are in place.

The economic assessment of POS greening considers the incremental value of costs and benefits of the green spaces that are perceived to be more amenable and accessible compared to the base case.

### What are the different values that can be used?

Four key values that can be considered when using an alternative water source for POS irrigation:

**Community willingness to pay for the continual green appearance of public open space:** There is evidence that people obtain benefits from the beautification of their neighbourhoods due to investment in continual green appearances of public open space.

**Community willingness to pay for more opportunities for general recreational visits to parks and open spaces (recreational amenity benefits):** There is evidence the community benefits from visiting parks and public open space. Providing higher quality green spaces will enable more community visits. Several studies estimate the willingness to pay (WToP) for visits.

**Health benefits (physical activity and mental wellbeing from active and passive recreation):** Increasing community participation in active and passive recreation when better quality open green space is provided results in improved health outcomes. This reduces healthcare costs, improves workforce productivity and improves mental health outcomes.

**Property price uplift of parks on house prices:** Non-market valuation studies have established a clear link between the 'greenness' and 'blueness' of a suburb and property prices in that suburb. The 'green and blue premium' can be interpreted as an indication of homeowners' WToP for the amenity and recreational benefits of a green landscape and for wetlands and lakes in their neighbourhood. WToP is a direct measure of these economic benefits.

### When to use each value?

Table 1 outlines some scenarios where the above values are applicable.

### What values are appropriate to use?

Values in Table 2 are approximate and suitable for the early planning stage. It is important to test the sensitivity of the project to low, medium, and high value assumptions (+/-50%).

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Table 1: Scenarios for greening evaluation

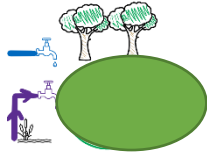
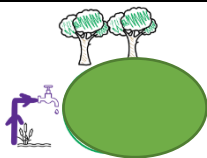
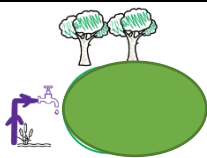
Scenario	Values to Consider				Notes
	1. WToP for continual green space	2. Recreational amenity benefits	3. Health benefits	4. Property uplift	
 <p>Irrigate an existing green space with alternative water. The green space is currently irrigated with potable water, including during dry and drought periods.</p>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	Care must be taken when quantifying the benefits of providing alternative water to green spaces currently irrigated with potable water. Only the benefits of greening over and beyond what potable water will provide can be quantified. Refer to the MW Social and Environment Values Tool (SEVT) guidance on how to apply the values.
 <p>Irrigate an existing green space with alternative water. The green space is currently not irrigated.</p>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	Refer to the MW SEVT guidance on how to apply the values.
 <p>Creation of new green space.</p>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	Refer to the MW SEVT guidance on how to apply the values.

Table 2: Economic values for greening for use in benefit value transfer

Economic Benefit/Description	Value	Unit	Base year	Source
<b>1. Community WToP for continual green appearance of public open space</b>				
Willingness to pay to prevent a 1% reduction in the proportion of green POS in local area to able to be kept green through summer: all households	\$1 <sup>1</sup>	\$/household/year	2019	van Bueren and Blamey (2020) Community Values For Green Public Open Space in Perth, Western Australia
Willingness to pay to prevent a 1% reduction in the proportion of green POS in local area to able to be kept green through summer: higher density households (apartments and town-houses)	\$1.50 <sup>1</sup>	\$/household/year	2019	van Bueren and Blamey (2020) Community Values For Green Public Open Space in Perth, Western Australia
<b>2. Recreational amenity benefits</b>				
Willingness to pay for visiting an urban park (average)	\$16 <sup>1</sup>	\$/person/day trip	2018	Social and Environmental Values Tool (SEVT) (2021)
<b>3. Health benefits</b>				
Total benefit of a person actively recreating for 75 minutes outdoors each week for the remainder of their lifetime; the sum of the physical health, mental health and productivity benefits (average)	\$300 <sup>1</sup>	\$/person once off	2018	SEVT (2021)
<b>4. Property price uplift of parks on house prices</b>				
Increased property value from medium house distance to first percentile distance from Park.  I.e., % change in price = % change in distance × -0.012	-0.012%	%/property once off	N/A	SEVT (2021)

<sup>1</sup> Values in in Table 2 should be converted from the base year to the year of analysis.

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## Factors to consider

- **Double Counting** – In cost-benefit analyses, double-counting benefits can be a significant risk. For example, property price uplift is valued using a hedonic regression model. This method infers the value properties have as a result of their proximity to green spaces. However, property price uplift benefits might include benefits associated with green spaces, such as health and recreational benefits. Thus, double counting may occur. Care must be taken when undertaking an economic evaluation of the non-market values to ensure benefits are not double-counted, and assumptions need to be clearly stated. Refer to the MW SEVT on how to avoid double counting.
- **Bill Impacts** – It is important to identify if the WToP assessment has been conducted for the project in isolation or an assessment of the bill (impacting the wider customer base). Regarding bill increases, the WToP is the maximum bill increase at or below which a customer would agree to a service improvement. For all large scale, major project, a WToP should be assessed at a whole-of-bill level.
- **Using WToP** – WToP is only required in support of a project where there will be a resultant customer bill or rate impact. To recover costs often WToP is used to demonstrate customer support for the project and its outcomes. However, WToP studies are complex to design and there is conjecture about the reliability of WToP studies to accurately reflect customers' ability/acceptance to pay. There is also no direct correlation between the value of the benefit and the ability of community or agencies to invest in a project. When designing a WToP study consideration should be given to:
  - Customers' preferences in relation to prices overall e.g. as part of engagement/ research underpinning price submissions have customers indicate an overall WToP
  - Availability of grants / contributions by beneficiaries to reduce the reliance on WToP from customers
  - How frequently the value has been used and if the total benefit claimed exceeds the WToP value

- The context in which the WToP was derived and the transferability of the WToP value e.g. timeframe, setting, project
- The similarity between the population demographics that the WToP survey was conducted on, and the population demographics of Greater Melbourne that the values are being applied to.

For further guidance on how to design a robust WToP study consult WSA (2019).

## How to evaluate economic values in IWM evaluation in 'today's dollars'?

It is essential that the costs and benefits used in an economic analysis are compared on an equal footing. This means all costs and benefits should either include or exclude inflation. When transferring values from the Fact Sheets you will need to make this adjustment to include or exclude inflation yourself.

Typically, cost benefit analysis is undertaken using a real discount rate (i.e. excluding inflation). This means that the discount rate applied does not consider how the value of money will change into the future due to inflation. Instead, all costs and benefits, both now and in the future,

are presented in 'today's dollars'. With 'today' representing the year of the analysis.

For example, imagine an IWM business case is being prepared in 2023 to consider the costs and benefits associated with a recycled water project. It is proposed that the project will be constructed in 2025, the cost estimate for the project was prepared in 2014 and the benefits values due to project are expected to be realized in 2030.

This project's costs and benefits should both be expressed based on their value in 'today's dollars', i.e. in real dollars based on the year of the analysis (in this case 2023). This means that the:

- Cost estimate from 2014 needs to be adjusted to reflect the inflation from 2014 to 2023. This can be done based on the Consumer Price Index (CPI) published by the Australian Bureau of Statistics (ABS), by using the Reserve Bank of Australia's [Inflation Calculator](#) or the ESC's CPI converter (2021)<sup>2</sup>.
- The benefit value used to monetize the potable water savings should be adjusted to reflect the

<sup>2</sup> For the ESC's CPI converter (2021)

inflation. For example, if the values are in \$2019, they need to be inflated to \$2023.

## References

van Bueren and Blamey (2020) Community Values For Green Public Open Space in Perth, Western Australia, Water, 4 (4).

SEVT (2021) Social and Environmental Values Table, developed by Marsden Jacob Associates for Melbourne Water  
Water Services Association of Australia (WSAA). (2019). Willingness to Pay, Principles for a robust study. August 2019 <https://www.wsaa.asn.au/publication/willingness-pay-studies-%E2%80%93-principles-and-guidance>, last accessed Sept.2021.

## Useful resources

Evangelio et al. (2018). What makes a locality attractive? Estimates of the amenity value of parks for Victoria, Infrastructure Victoria Technical Paper No. 4/18

Hurlimann and McKay (2005). Contingent valuation by the community of indirect benefits of using recycled water: an Australian case study, Water Science and Technology: Water Supply, 5, 95-103

Iftekhar, M.S, Gunawardena, A., Fogarty, F., Pannell, D. and Rogers, A. (2019). INFFEWS Value tool: Guideline (Version 2): IRP2 Comprehensive Economic Evaluation Framework (2017 – 2019). Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities.

INFFEWS Non-Market Value Tool and resources (2020), CRC Water Sensitive Cities, <https://watersensitivecities.org.au/investment-framework-for-economics-of-water-sensitive-cities-inffews-value-tool/>, last accessed Sep.2021.

Marsden Jacob Associates (Marsden Jacob). (2018). Active impacts: The economic impacts of active recreation in Victoria, Report for Sports and Recreation Victoria., March 2018

Water Services Association of Australia (WSAA). (2019). Health benefits from water centric liveable communities May 2019

## IWM economic valuation community of practice

The economic values in these Fact Sheets have been chosen so they are directly relevant to investments in the Greater Melbourne area. You can use the economic values in the Fact Sheets to establish high-level estimates of the potential benefits of proposed IWM and blue-green infrastructure investments. You can then use these for preliminary high-level benefit estimates in economic analyses, including cost-benefit analysis.

### Keep up to date with what's happening

Last update December 2021. For more information about this factsheet please contact your water utility representative

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