Tree Valuation in WA Local Governments

Summary

Tree valuation can be used to put a monetary value on the significant social, economic and environmental benefits trees provide. However, there are many tree valuation methods available and no current Australian Standard for valuation methodology. WALGA investigated the prevalence and purpose of tree valuation from a sample of 12 metropolitan Local Governments. Most of these Local Governments are utilising tree valuation to assist with matters such as tree retention efforts, recouping of costs for trees lost due to development, and for community awareness and education. The Helliwell valuation method is commonly used due to its simplicity and long-history of use, however the applied financial values are somewhat outdated, generating lower tree values compared with other available methods. Inclusion of the ecological services value in the total value of a tree is becoming more common. The *Minimum Industry Standard MIS506 Tree Valuation* (Arboriculture Australia, 2022) provides the best guidance on tree valuation methods in the absence of an Australian Standard.

Introduction

Trees and other vegetation in urban areas provide significant social, economic, and environmental benefits to the community. In most urban areas across Western Australia, there has been a decline in canopy cover, particularly on private land. Within the Local Government sector, there is range of approaches towards tree retention, some of which use tree valuation systems to disincentivise tree removal or enable recouping of the amenity or other values trees provide, as well as the cost to replace lost canopy.

The challenge for tree valuation is that the benefits trees provide are not market goods, and therefore there is a lack of comparative market-based price. Various tree valuation methods exist to recognise trees as assets and quantity the contribution of trees to amenity, with consideration to variables such as species, condition, rarity, location, and aesthetics. In contrast to other Local Government assets, the value of trees appreciates over time.

Tree valuation methods include, but are not limited to, *Amenity Valuation of Trees and Woodlands* (Helliwell, Great Britain origin*), Council of Tree and Landscape Appraisers* method (CTLA, United States origin), *Standard Tree Evaluation Method* (STEM, New Zealand origin), *Burnley Method* (Melbourne origin), the *Maurer-Hoffman Formula* (Melbourne origin) and the *Thyer Method* (Sydney origin). Methods developed overseas can have limitations when applied in the Australian context, though still have their use.

Where a Local Government approves tree removal due to development (e.g. widening of an existing vehicle crossover, with site constraints preventing relocation of the crossover to avoid the tree), they can notify the applicant that

removal of the tree will be permitted subject to the payment. This can guide the developer to consider alternative build methods to avoid costs, or alternatively pay the required fees.

WALGA sought information from Local Governments to determine:

- The extent to which the sector undertakes tree valuation,
- The primary valuation method used,
- Whether valuation is completed in-house or by consultants, and
- How the calculated tree value is applied in practice.

Local Government snapshot

A total of 12 Local Government members of the Urban Forest Working Group responded to the request for information on tree valuation; Armadale, Belmont, Cambridge, Canning, East Fremantle, Fremantle, Kalamunda, Kwinana, Mandurah, Nedlands, Perth and Victoria Park. Appendix 1 provides detail on tree valuation methods and applications for each Local Government.

All responding Local Governments calculate the value of trees with the exception of the Town of East Fremantle and the City of Nedlands. Individual tree values range from $1,000 - $75,000 in the examples provided (see Case Studies 1 & 3).

The Helliwell method is used by most of the Local Governments for its simplicity and long history of use, however several noted that it relies on the expert judgement of an arborist. The resulting tree values are seen to be underestimates due to the amenity focus of the calculations.

Local Governments undertake tree assessments in house or through the engagement of consultant services. Consultants may be engaged to complete the initial valuation of public realm trees, with values then updated in house, or to complete valuations of specific tree(s) associated with a specific purpose.

Tree valuation is used for a variety of purposes:

- Leverage to help retain trees,
- Bonds for development sites,
- Payment of fees association with tree loss due to Development Applications,
- Tree vandalism infringements,
- Residential property owner removal requests,
- Service provider tree removal requests,
- Building a case for tree removal due to infrastructure damage costs, and
- Community awareness and education.

Where a Local Government seeks payment of fees associated with the approved removal of a tree, the proponent is generally required to pay fees for:

(1) the calculated value of the tree,
(2) the physical removal of the tree, and
(3) the cost of a replacement tree.

Some Local Governments charge additional fees, for instance the City of Kalamunda also includes a tree maintenance fee (see Case Study 1).

Trees can also be lost during building works that don't require development approval. To address this, the City of Kalamunda is updating operational policies

(e.g. crossover requirements that have no associated development) to include the valuation of street trees outside of the Development Application process.

Discussion

Local Governments consider valuation of trees is useful to meet a variety of purposes, however, note there is room for improvement in valuation methodology.

Each valuation method differs in the exact variables and formula used to determine value, and many reflect only a subset of tree benefits. The best method to use often depends on the intended purpose. For example, the Helliwell method is simple and can be applied to groups of trees, while other methods may be more accurate and better applied to individual trees.

Tree values will vary depending on the method used, with CTLA and Helliwell consistently producing the lowest values (Arboriculture Australia, 2022). There are also differences in values between individual appraisers (Arboriculture Australia, 2022), with a key design challenge for valuation methods being to improve the reproducibility of qualitative components.

In some cases, the ecological services value the tree provides is also calculated and included in the total value of the tree, with the i-Tree Eco valuation tool (adapted for Australian conditions) commonly used. This may account for the other benefits provided by trees, such as wildlife, shade, climate control and stormwater control. These values are adequately calculated using accepted market values and methodologies as their basis. For instance, the City of Melbourne calculates the amenity value of trees using the Maurer-Hoffman Formula together with the i-Tree ecological services value. The City of Perth uses iTree Eco to calculate the value of their urban forest (see Case Study 2).

There have been several attempts to draft Australian Standards for tree valuation over the past 50 years, however none have been finalised for adoption. Within the industry, it is generally accepted that *Minimum Industry Standard MIS506 Tree Valuation* (Arboriculture Australia, 2022) provides the best guidance on tree valuation in the absence of an Australian Standard. MIS506 brings together the principles and practices of accepted valuation methods (Burnley, CAVAT, 2021 City of Melbourne, STEM and Thyer methods) along with best practice principles from modelling and market research.

It is recommended tree valuation methods are reviewed regularly (every three to five years) to ensure that they remain contemporary. However, this may not occur in practice. For example, the Helliwell method has not been updated since 2012, with applied financial values considered somewhat outdated.

Key challenges not addressed by current tree valuation methods include valuing tree communities and valuing trees according to different land use types/zones. There are also the challenges of how emerging threats impacts tree valuations (e.g. reproductive hosts for the Polyphagous shot-hole borer). Amenity value calculations may also not adequately consider specific areas such as cultural values (e.g. trees of significant Aboriginal cultural heritage).

In the future, tree valuation is expected to play a larger role in placing a monetary value on trees lost, and future projections of loss, due to threats such as pests/diseases and climate change.

Case Study 1: Town of Victoria Park

The Town of Victoria Park uses Helliwell valuation of trees to encourage retention where removal of verge trees is requested via a Development Application. Removal of street trees will only be considered when all other options have been exhausted. Where tree removal is approved by the Town, the Helliwell value + removal cost + replacement cost + three years maintenance cost + administration fee is charged to the applicant. In the example provided below, the total applicant fee is in excess of $10,000.

Item	**Charge**
Helliwell valuation (range $0 - $76,820.40)	$8,535.60
Removal and stump grinding (range $129 to $2,070)	$605.45
Tree replacement fee	$560.81
Administration fee	$100
GST (10%)	$980.19
TOTAL	**$10,782.05**

Case study 2: City of Perth valuation of trees to discourage vandalism

The City of Perth has started to install signage displaying the amenity and ecological value of the tree, in instances where they have been vandalised. The signage is used to educate the community on the value of trees and assist lower incidents of tree vandalism.



The City of Perth uses iTree Eco to calculate the whole of forest value. The City promotes that the trees within the municipality are valued at over $100 million for the significant social, environmental and economic benefits they provide.

Case study 3: City of Mandurah valuation of trees in response to a removal request

The City of Mandurah engaged Bowden Tree Consultancy to assess six trees (mixed species and age classes) in a municipal reserve adjacent to Peeble Beach Boulevard, Meadow Springs. The assessment used the Revised Burnely method of tree valuation, following a proposal to construct a pumping station on the site the trees were situated within the reserve. The assessment identified predominantly good structural condition and high vitality (health) of each tree. The calculated value of each tree ranged from $827 to $72,376, with the total value of the six trees determined to be $108,895 (Bowden Tree Consultancy, 2016). The City used the valuation to recoup the monetary value of the trees from the utility provider, following approval of the removal application.

Appendix 1: Local Government tree valuation method and applications

Local Government	Tree Valuation	Method	In house/external	Applications
Armadale	Yes	Helliwell	Both in house and consultants (situation dependent)	Use valuation as leverage to help retain trees and seek compensation for removals. The is room for improvement with the process but it is a starting point.
Belmont	Yes	Helliwell (primary method) Burnley	Both in house and consultants	Trees are assessed as a baseline by a consultant during tree database audit updates and by staff when needed for DA assessment or replacement value paid by developer. Assessments are also used to calculate a damage value charged for vandalised tree infringements.
Cambridge	Yes	Helliwell	Consultants completed initial valuations, values updated in house.	Use valuation as a bond on development sites.
Canning	Yes	Helliwell	Consultant	Valuation used in different ways, depending on the context, but mostly for information rather than recouping costs of removed trees.
East Fremantle	No			

Fremantle	Yes	Helliwell	Both in house and consultants	Valuation is used to recover costs of tree loss due to various reasons, including Development Applications, vandalism, and residential and service provider removal requests.
Kalamunda	Yes	Council of Tree and Landscape Appraisers (CTLA) method	In house (may outsource if volume increases)	The CTLA method has been updated to include ecosystem services, habitat value and strategic drivers for urban forestry. The methodology is reflected in LPP 33 - Tree Retention, and in fees and charges (revoked in February 2024). In house valuation assessments are completed by an arborist. Trees are assessed in response to Development Applications and due to the high value, have worked as a disincentive, with the City not yet having to invoice for any removal or replacement. Looking to update operational policies and crossover requirement to include valuation of street trees outside of the DA process (e.g. crossover applications that have no associated development)
Kwinana	Yes	Helliwell	Consultant	The City had an incident where a developer dewatered a subdivision adjacent to a natural POS at the height of summer, which resulted in many tree deaths. The City requested a valuation (Helliwell undertaken by a consultant) of the trees lost within the POS to use as justification for the rehabilitation of the POS via a management plan. Tree loss conservatively equated to in excess of $1 million.

Mandurah	Yes	Maurer-Hoffman Burnley Helliwell	Both in house and consultants Consultants: Paperbark Technologies Arbour Logic Arborite Bowden Tree Consultancy	Internal valuation generally uses the modified version of Maurer-Hoffman, as used by the City of Melbourne, while consultants have used the Burnley method and Helliwell method. The Helliwell method tends to undervalue trees (Arboriculture Australia Minimum Industry Standards 506, Tree Valuation, 2022) Valuation is used as a tool for both tree retention in relation to Development Applications, and conversely for tree removal when assessing costs for infrastructure repairs. The City has a tree removal and replacement flat fee that does not take tree size and amenity into consideration, which needs to be addressed.
Nedlands	No			Will be updating the City's Urban Forest Strategy and related documentation, and will consider tree valuation at this time.
Perth	Yes	Maurer-Hoffman (amended formula)	In house (Senior Arborist)	Trees are assessed on a case by case basis - this may be in response to DA's, removal requests, to inform a bond amount, or for education purposes (e.g. the City has started including the value on signage for vandalised trees). The City is also looking at using iTree to calculate whole of forest values.

Victoria Park	Yes	Helliwell	Consultants	Use valuation to encourage tree retention where verge tree removal is requested via a Development Application. Where tree removal is approved, the Helliwell value + removal cost + replacement cost + three years maintenance cost + administration fee is charged to the applicant Drafting a new local planning scheme to give the Town more powers and conditions regarding tree removals and significant registered trees on private property.