

# Social Impact Assessment - Hills Fig Trees Laman Street Newcastle

## Stage 1 Developing a Social Impact Assessment Framework

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## **Executive Summary**

In order to address the issues surrounding the Hills Fig Trees in Laman Street, Newcastle City Council has commissioned independent arboricultural advice and investigated and quantified the risk of the trees, developed risk abatement strategies, determined underground utility locations, investigated root distribution, undertaken pictorial review and reviewed the replacement opportunities.

More recently Council has commissioned a Heritage Study and this Social Impact Study. The Social Impact Study is being undertaken in 2 stages. Stage 1 (the subject of this report) develops a Social Impact Framework to examine the issue of the Hills Fig Trees and Stage 2 will look to implement this framework.

Council is developing a vision for the future of the Laman Street Civic Precinct. Interested community members have been invited to attend a two day intensive design workshop. Individuals or groups who are unable to be part of the workshop can also be involved through other processes being established by Council.

### **Key Findings**

The literature scan undertaken as part of this project documents many of the environmental services trees provide – including reducing air pollution, storm-water control, carbon storage, improved water quality and reduced energy consumption. Benefits to society are more difficult to assess but are just as significant as the environmental benefits. The literature demonstrates how trees positively impact on physical and mental health, improve social cohesion and reduce crime. Trees also benefit the population from an aesthetic perspective.

Key benefits of trees include:

- Social benefits – the literature shows how trees positively impact on physical and mental health.

- There is also evidence that trees improve social cohesion - Trees are linked with greater use of outdoor spaces by adults and children, more social interaction, healthier patterns of adult-child interaction and supervision, stronger social ties, greater sense of safety, lower levels of graffiti and other signs, fewer property crimes, and fewer violent crimes.
- Trees also benefit the population from an aesthetic, symbolic and sensory perspective - Trees have many different values to people – what people value is often not the tangible benefit such as energy savings or property values but rather the experiences that trees provide.
- Reduced temperature – The cooling benefits of urban vegetation, achieved through the processes of increased solar reflection and evapotranspiration can result in air temperature reduction.
- Improved air quality including reduced engine pollutants and ozone.
- Reduced building energy consumption.

### The Social Impact Framework

The Social Impact Assessment framework proposed in this report involves the application of a Social Impact matrix approach as developed by Alison Ziller and Peter Phibbs. The form of the matrix is given below:

|  | Non-financial benefits | Financial benefits | Non-financial costs | Financial costs |
|--|------------------------|--------------------|---------------------|-----------------|
| Costs and benefits to individuals                                      |                        |                    |                     |                 |
| Costs and benefits to groups (e.g. Residents, parents, ratepayers etc) |                        |                    |                     |                 |

Source: Ziller, A and Phibbs, P *Integrating social impacts into cost benefit studies: a participative method*, p5 Available at: <http://www.communitybuilders.nsw.gov.au/sync/PPR8%20-%20Integrated%20Cost%20Benefit%20Methodolgy.pdf>

The information gained through the Design Workshop process and the research findings of the literature scan will be incorporated within the “matrix’. Additional information relating to such elements as energy costs and savings, maintenance etc. will be considered. In this way any options for consideration developed by the Design Workshop can be assessed.

Stage 2 of this project will include:

- Issues relating to particular groups within the community
- Identification of opportunities and constraints
- Identification of the positive and negative impacts
- Consideration of key strategies to address the social sustainability of the community including how any potential negative impacts will be minimised or investigated
- Provide advice on criteria to be met in terms of future planning
- Develop an outcomes monitoring process.

## Introduction

### Background

The Laman Street Hills Fig Trees were planted in the 1930s as a component of a program to plant various Fig Trees within Newcastle.

The Hills Figs have been subjected to a range of management processes over time – much of this activity has been focused on the built environment surrounding the trees such as the roads, kerbs, gutters and underground utilities e.g. electricity lines.

In order to address issues surrounding the Hills Figs in Laman Street, Council has commissioned independent arboricultural advice and investigated and quantified the risk of the trees, developed risk abatement strategies, determined underground utility location, investigated root distribution, undertaken a pictorial review and reviewed tree replacement opportunities including benchmarking.<sup>1</sup>

More recently Council has commissioned a Heritage Study and this Social Impact Study.

### About this Project

Newcastle City Council has been active in the application of Social Impact Assessment at the local government level over many years.

In 1992 Council established the Social Impact Consultative Panel to provide advice to Council on the potential social impacts of a range of issues, policies and actions in the City. Subsequently in 1999 Council adopted a Social Impact Assessment Policy for Development Applications.<sup>2</sup>

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<sup>1</sup> [http://www.newcastle.nsw.gov.au/environment/community\\_trees/laman\\_street\\_precinct](http://www.newcastle.nsw.gov.au/environment/community_trees/laman_street_precinct)

<sup>2</sup> Newcastle City Council 1999, *Social Impact Assessment Policy for development applications*. Available at: [http://www.newcastle.nsw.gov.au/\\_data/assets/pdf\\_file/0005/5576/social\\_impact\\_assessment\\_policy.pdf](http://www.newcastle.nsw.gov.au/_data/assets/pdf_file/0005/5576/social_impact_assessment_policy.pdf)

This policy provides a definition of social impacts as changes to:

- People's way of life – how they live, work, play and interact with one another on a day-to-day basis,
- Their culture – shared beliefs, customs and values,
- Their community – its cohesion, stability, character, services and facilities.

Social Impact Assessment provides a sound basis from which to understand the issues, needs and expectations of the current social context and to anticipate the likely changes to issues, needs and expectations in the future.

This project is being undertaken in 2 stages. Stage 1 (the subject of this report) develops a Social Impact Assessment Framework to examine the issue of the Hills Fig Trees in Laman Street and Stage 2 will look to implement this framework.

In this context this report:

- Provides a literature scan relating to the significance and value of trees in the urban context
- Clarifies the scope of the assessment – identifies issues and affected groups and community assets which may be impacted
- Develops a Social Impact Assessment framework to examine the issues relating to the Fig Trees in Laman Street.

Stage 2 will:

- Look to apply the framework developed at Stage 1
- Include a consultation process
- Evaluate social impact and develop mitigation measures, if appropriate
- Establish an outcomes monitoring process.

Council is developing a vision for the future of the Laman Street Civic Precinct.

Interested community members have been invited to attend a two day intensive design workshop. Individuals or groups who are unable to be part of the workshop can also be involved through other processes being established by Council.

It is proposed that the consultative process at Stage 2 will be undertaken as part of this broader consultation planned by Council in relation to the Laman Street – Civic Precinct.

## **Context of the Assessment**

On 15 December 2009 Council resolved:

“That Council form a community design process using place making principles for the civic and cultural precinct of Laman Street.

To consider the arboriculture advice, the relevant resource and risk issues and the range of options available to Council and the community to address the future of the trees and make appropriate recommendations to Council.”<sup>3</sup>

Accordingly, interested community members have been invited to attend a two day intensive design workshop - individuals or groups who are unable to be part of the workshop can also be involved through other processes being established by Council.

It is proposed that this Framework document form part of the briefing documentation for this design workshop.

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<sup>3</sup> City of Newcastle, Minutes of the Ordinary Council Meeting held in the Council Chambers on 15 December 2009 at 6.30pm

# Literature Scan - Social Impact of trees

## Background

This section presents the findings of a literature scan relating to the social impact of trees in the urban context.

A variety of literature sources were researched including professional journals, on-line publications and web sites. The sources identified were largely from internet-based research. The objective of this exercise was to scan a range of literature to inform the development of the Social Impact Framework.

A listing of authors and titles is provided at Attachment 1.

## Findings

The literature scan covered a broad range of benefits associated with trees in different settings. The benefits are summarised as a brief synopsis by the Davey Resource Group as follows:

“Compelling statistics and findings from a great number of peer-reviewed, scientifically valid, and legally defensible studies are currently available to describe the enormous impact vigorous, well-maintained public trees and forests have for our cities.

These benefits can now be quantified in terms of the variety of green infrastructure services – stormwater management, air pollution control, water quality improvement carbon sequestration, and energy consumption reductions, among others. Trees also contribute greatly to economic development and stability of cities through increased real estate values, attraction and retention of businesses and their employees, and the enhancement of consumer activities in business districts. Trees also increase the quality of life through aesthetics and providing wildlife habitat.

These many and important benefits should be recognized and promoted by urban forest managers and those responsible for the care of public trees. The tangible assets and benefits that trees provide should be accounted for when making budget and funding

decisions for this unique public resource that can be considered as biogenic utility and green infrastructure component in the public works sector.”<sup>4</sup>

An illustration of the forms of benefits associated with trees is provided within the selected literature findings at Attachment 2.

This literature scan demonstrates that trees have an explicit impact on many aspects of people’s lives, including their health, communities, and air quality and energy consumption. The key benefits and costs are summarised below:

- Social benefits – the literature shows how trees positively impact on physical and mental health.
  - Trees can have a strong, relaxing effect on people. A series of studies have found that “individuals who viewed urban scenes with vegetation had slower heartbeats, lower blood pressure, and more relaxed brain wave patterns than individuals who viewed scenes without vegetation”.<sup>5</sup>
- There is also evidence that trees improve social cohesion.
  - Trees are linked with greater use of residential outdoor spaces by adults and children, healthier patterns of children’s outdoor activity, more social interaction among adults, healthier patterns of adult-child interaction and supervision, stronger social ties and greater resource sharing among adult residents, greater sense of safety and adjustment, lower levels of graffiti and other signs of social disorder, fewer property crimes, and fewer violent crimes.<sup>6</sup>
- Trees also benefit the population from an aesthetic, symbolic and sensory perspective

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<sup>4</sup> Davey Resources Group, 2007, *Literature Review and Summary Report Urban Forest Management and Public Works: Improving Communications and Building Capacity*, p 3 Available at: <http://www.apwa.net/Documents/About/CoopAgreements/UrbanForestry/Literature%20Review.pdf>

<sup>5</sup> Dwyer, JF, Schroeder, H.W. and Gobster, PH. 1991 ‘The Significance of Urban Trees and Forests: Toward a Deeper Understanding of Values.’ *Journal of Arboriculture* 17(10): October 1991.

<sup>6</sup> Kuo, FE. 2003 ‘Social Aspects of Urban Forestry. The Role of Arboriculture in a Healthy Social Ecology.’ *Journal of Arboriculture* 29 (3): May 2003

- Ties between people and trees are associated with traditions, symbolism, and the need to 'get involved' at the local level to sustain or enhance the environment for present and future generations. Trees have many different values to people – what people value is often not the tangible benefit such as energy savings or property values but rather the experiences that trees provide.<sup>7</sup>
- Reduced temperature – The cooling benefits of urban vegetation, achieved through the processes of increased solar reflection and evapotranspiration can result in air temperature reduction of between 2-8\* C.<sup>8 9</sup>
- Improved air quality including reduced engine pollutants and ozone<sup>10</sup>
- Reduced building energy consumption – trees will reduce building energy consumption as discussed in the literature.<sup>11 12</sup>
- Biodiversity including the creation of wildlife habitats
- Costs identified include cost of planting, tree trimming, tree removal and disposal, pavement damage, flooding caused by leaf litter, green waste disposal and irrigation.<sup>13</sup>

<sup>7</sup> Dwyer, JF, Schroeder, H.W. and Gobster, PH 1991, 'The Significance of Urban Trees and Forests: Toward a Deeper Understanding of Values'. *Journal of Arboriculture* 17(10): October 1991.

<sup>8</sup> Cooperative Research Centre for Irrigation Futures. 2008, *Irrigation of Urban Green Spaces: a review of the Environmental, Social and Economic benefits*. (Section 2.1)

Available at: <http://www.irrigationfutures.org.au/news.asp?catID=9&ID=679>

<sup>9</sup> George Morris Centre, 2007, *Literature Review of Documented Health and Environmental Benefits Derived from Ornamental Horticultural Products*: Available at:

[www.agrireseau.qc.ca/.../Reports\\_Ornamentals\\_Health\\_Benefits.pdf](http://www.agrireseau.qc.ca/.../Reports_Ornamentals_Health_Benefits.pdf)

<sup>10</sup> George Morris Centre, 2007. *Literature Review of Documented Health and Environmental Benefits Derived from Ornamental Horticultural Products*: Available at:

[www.agrireseau.qc.ca/.../Reports\\_Ornamentals\\_Health\\_Benefits.pdf](http://www.agrireseau.qc.ca/.../Reports_Ornamentals_Health_Benefits.pdf)

<sup>11</sup> Coder, K.D. *Identified Benefits of Community Trees and Forests* Available at:

<http://warnell.forestry.uga.edu/service/library/index.php3?docID=124&docHistory%5B%5D=2>

<sup>12</sup> Moore, GM. 2009, *Urban Trees: Worth More Than They Cost* Available at:

<http://www.aila.org.au/LApapers/papers/trees/Moore-UrbanTreesWorthMoreThantheyCost.pdf>

<sup>13</sup> McPherson, EG. Simpson, JR.; Peper, PJ. and Qingfu, X.1999, *Tree Guidelines for San Joaquin Valley*: Available at:

<http://www.coloradotrees.org/benefits/TreeGuidelinesforSanJoaquinValley.pdf>

## Development of a Social Impact Assessment Framework

There is a range of approaches to Social Impact Assessment. It is proposed that the most appropriate approach for the assessment of the Social Impact of the Hills Fig Trees in Laman Street in the context of the Design Workshop involves the application of the “matrix” approach as developed Alison Ziller and Peter Phibbs. This approach accords social issues equivalent recognition with financial issues with the matrix being completed by including stakeholder views as well as research findings. “ The balance of costs and benefits is assessed discursively rather than being reduced to a simple ratio.”<sup>14</sup>

The form of the matrix is given below:

|  | Non-financial benefits | Financial benefits | Non-financial costs | Financial costs |
|--|------------------------|--------------------|---------------------|-----------------|
| Costs and benefits to individuals                                      |                        |                    |                     |                 |
| Costs and benefits to groups (e.g. Residents, parents, ratepayers etc) |                        |                    |                     |                 |

Source: Ziller, A and Phibbs, P *Integrating social impacts into cost benefit studies: a participative method*, p, 5 Available at: <http://www.communitybuilders.nsw.gov.au/sync/PPR8%20-%20Integrated%20Cost%20Benefit%20Methodolgy.pdf>

It is proposed that the Design Workshop involve stakeholder participation to fill in the matrix. The information gained through research as part of this project is incorporated within the table in the following section and this will be presented to the stakeholders. Additional information relating to such elements as energy costs and savings, maintenance etc. would be provided by Council staff.

In this way any options for consideration developed by the Workshop can be assessed.

<sup>14</sup> Ziller, A and Phibbs, P *Integrating social impacts into cost benefit studies: a participative method*: Available at: <http://www.communitybuilders.nsw.gov.au/sync/PPR8%20-%20Integrated%20Cost%20Benefit%20Methodolgy.pdf>

Ziller and Phibbs conclude:

“It is our frequent experience that as the cells of the matrix are completed, the relative weight of costs and benefits become apparent. Stakeholders see the completed matrix gradually emerge and voice their assessment. Or we ask them where they think the relative weight lies. While a general consensus about the relative weight of costs and benefits in regard to any one issue is not the same thing as finding an agreed solution, it is a good starting point.” (p9)

## **The Scope of the Framework**

A key element in preparing a Social Impact Assessment is defining the area of influence relating to the proposal and the stakeholders subject to the impact.

It is proposed that the area of influence for the framework form the Civic Precinct i.e. the area bounded by Hunter, Darby, Queen and Auckland Streets. This area has been defined as the subject of the Design Workshop.

Stakeholders in relation to the Laman Street trees are broad in terms of the nature of interest and geographic spread. A draft list of stakeholders is provided overleaf – the participants in the design workshop may wish to amend and add to the listing. It is proposed that the Matrix approach be utilized for each group of stakeholders following consideration at the Design Workshop.

| <b>Stakeholder Group</b>                                      | <b>Stakeholders</b>   |
|---|---|
| Stakeholders Associated with the Newcastle Region Art Gallery | Newcastle Region Art Gallery Foundation<br>Newcastle Region Art Gallery Society<br>Newcastle Region Art Gallery Volunteers<br>Newcastle Region Art Gallery Visitors<br>Newcastle Region Art Gallery Workshop Participants<br>Newcastle Region Art Gallery Staff |
| Stakeholders associated with the Newcastle Region Library     | Newcastle Region Library Customers and Visitors<br>Newcastle Region Library Staff<br>Newcastle Region Library – conference and theatre users  |
| Particular interest in trees                                  | Save our Figs Group<br>Trees in Newcastle   |
| Precinct committees   | Darby St Mainstreet Committee<br>City Centre Precinct Committee   |
| Transport   | Newcastle City Council Transport Advisory Committee   |
| Safety and Crime  | Newcastle Safety and Crime Prevention Advisory Committee<br>NSW Police (Newcastle Local Area Command)<br>Pride of Place Taskforce   |
| Residents   | Cooks Hill Residents Group  |
| Primary School  | Newcastle East Primary School P and C   |
| Roads and Traffic   | NSW RTA (Hunter Region)<br>NSW Transport and Infrastructure   |
| Churches  | Newcastle Baptist Tabernacle (Laman St)<br>St Andrew Presbyterian Church (Laman St)   |
| Pre-school  | St Andrews Community Church Pre-school  |
| University of Newcastle (Newcastle Conservatorium of Music)   | Staff<br>Students and those associated with students<br>Performance attendees   |
| Council Maintenance staff                                     | Representative from Newcastle City Council Civic Precinct Maintenance Staff   |
| Business Groups   | Urban Development Institute of Australia (Hunter Chapter)<br>Hunter Business Chamber  |
| Energy  | Energy Australia  |
| Heritage  | National Trust  |
| RSL   | RSL (memorials in Civic Park)   |
| TPI   | TPI House (cnr King and Auckland)   |
| Aboriginal and Torres Strait Islander                         | Guraki Aboriginal and Torres Strait Islander Advisory Committee   |
| Individuals   | Including representatives of Laman Street residents   |
| Ratepayers  | Ratepayers  |
| Young people  | Youth Council   |
| People with a disability                                      | People with a disability  |

The following have been identified as particular issues of concern prior to the Design Workshop process and are provided only as an indicative list of issues.

|                      | <b>Example of particular issues</b>   | <b>Stakeholders who may be concerned</b>  | <b>Reference</b>  |
|----------------------|---|---|---|
| Art Gallery          | <ul style="list-style-type: none"> <li>+ the special needs of art in terms of light and temperature levels – changes in trees would lead to the need to assess light and temperature levels</li> <li>+ additional energy costs would result with any changes to the trees</li> <li>+ requirements of people with a disability need to be addressed in terms of access</li> <li>+ Street context needs to accord with the context of the Gallery</li> <li>+ Issues related to the design of the redevelopment of the Art Gallery in relation to the street.</li> </ul> | <ul style="list-style-type: none"> <li>Art Gallery Foundation</li> <li>Art Gallery Society</li> <li>Art Gallery Volunteers</li> <li>Art Gallery Visitors</li> <li>Art Gallery Workshop Participants</li> <li>Art Gallery Staff</li> <li>Ratepayers</li> </ul>   | <ul style="list-style-type: none"> <li>Discussion with Art Gallery Director</li> <li>Literature review</li> </ul>                                 |
| Library              | <ul style="list-style-type: none"> <li>+ Parking requirements of people with a disability and older patrons</li> <li>+ Cleaning costs of the Library – trees increase these costs</li> <li>+ Energy costs – trees reduce energy costs</li> <li>+ Street context needs to accord with the function of a Library</li> </ul>   | <ul style="list-style-type: none"> <li>Library Customers and Visitors</li> <li>Library Staff</li> <li>Library – conference and theatre users</li> <li>Ratepayers</li> </ul>   | <ul style="list-style-type: none"> <li>Discussion with Life Services Manager</li> <li>Literature Review</li> </ul>                                |
| Crime and Safety     | <p>Trees, as per the literature, are associated with lower crime rates - greater sense of safety and adjustment, lower levels of graffiti and other signs of social disorder, fewer property crimes, and fewer violent crimes. [1]</p>  | <ul style="list-style-type: none"> <li>Newcastle Safety and Crime Prevention Advisory Committee</li> <li>NSW Police (Newcastle Local Area Command)</li> </ul>   | <ul style="list-style-type: none"> <li>Literature Review</li> <li>Public Voice</li> </ul>   |
| Parking availability | <p>Issues relating to parking – availability</p> <p>Particularly relates to access for people with a disability</p> <p>Note – many older members of the community and people with a disability use the Art Gallery and Library</p>  | <ul style="list-style-type: none"> <li>Gallery / Library / Conservatorium Stakeholders</li> <li>NSW Police</li> <li>People with a disability</li> <li>Church attendees</li> <li>Visitors</li> <li>Pride of Place Taskforce</li> <li>Business Chamber</li> <li>Cooks Hill Residents Group</li> <li>Darby St Mainstreet / City Precinct Committees</li> </ul> | <ul style="list-style-type: none"> <li>Discussions with Director of the Gallery and Life Service Manager</li> <li>Newspaper references</li> </ul> |

|  | <b>Example of particular issues</b>  | <b>Stakeholders who may be concerned</b>  | <b>Reference</b>  |
|--|--|---|---|
| Social Cohesion  | Trees linked with greater use of outdoor spaces, more social interaction, healthier patterns of adult-child interaction and supervision, stronger social ties. [1]   | All Stakeholders  | Literature Review<br>Public Voice<br>Newspaper reports                                      |
| Value of trees to people                               | Ties between people and trees are associated with traditions, symbolism, and the need to 'get involved' – what people value is often not the tangible benefit such as energy savings or property values but rather the experiences that trees provide - Sensory Dimension + Trees are carriers of symbolic meaning [2] | Save our Figs Group<br>Trees in Newcastle<br>Other Stakeholders                                   | Literature Review<br>Correspondence<br>Newspaper reports<br>Public Voice<br>Individuals     |
| Pollution reduction                                    | Amelioration of urban climate extremes<br>Mitigation of urban heat islands<br>Store and sequester carbon<br>Reduce noise pollution<br>Improve air quality<br>Improve water quality [3]   | Library<br>Art Gallery<br>Save our Figs<br>Trees in Newcastle<br>Ratepayers<br>Other Stakeholders | Literature Review<br>Correspondence<br>Newspaper reports<br>Public Voice                    |
| Energy issues  | Lower temperatures of parked cars<br>Reduce volatilization of bitumen<br>Reduce consumption of electricity for heating and cooling<br>Reduce need to invest in new power facilities [3].   | Save our Figs<br>Trees in Newcastle<br>Ratepayers<br>Other Stakeholders                           | Literature Review<br>Correspondence<br>Newspaper reports<br>Public Voice                    |
| Aesthetic / architectural                              | Aesthetic contribution, scenic beauty, visual amenity<br>Architectural enhancement of buildings<br>Control urban glare and reflection. [3]   | Save our Figs<br>Trees in Newcastle   | Literature Review<br>Individuals as per correspondence<br>Newspaper reports<br>Public Voice |
| Costs of trees   | The following costs are identified:<br>Cost of planting<br>Tree trimming<br>Tree removal and disposal<br>Pavement damage<br>Flooding caused by leaf litter<br>Green waste disposal<br>Irrigation costs   | Ratepayers<br>Council<br>Council<br>Maintenance staff   | Literature Review   |
| Risk of Injury and loss of life and damage to property | Critical issue in terms of social impact of loss of life. The professional literature has largely ignored the issue. Both quantitative and qualitative research is lacking. [4]  | All stakeholders would see this as a critical issue   | Literature review<br>Public Voice<br>Council reports<br>Arborist reports [5]                |

|  | <b>Example of particular issues</b>   | <b>Stakeholders who may be concerned</b>                        | <b>Reference</b> |
|--|---|---|------------------|
| Issues relating to Aboriginal heritage | Also refer Heritage Study   | Guraki Aboriginal and Torres Strait Islander Advisory Committee |                  |
| Legal                                  | Issues relate to insurance coverage in terms of Council and employees with delegated responsibility in terms of the Occupational Health and Safety Act 2000 (NSW) | Council Ratepayers Responsible staff                            |                  |

**Notes:** [1] Kuo, FE 2003, ' Social Aspects of Urban Forestry. The Role of Arboriculture in a Healthy Social Ecology'. *Journal of Arboriculture* 29 (3): May 2003

[2] Dwyer, JF, Schroeder, HW. and Gobster, PH 1991, 'The Significance of Urban Trees and Forests: Toward a Deeper Understanding of Values.' *Journal of Arboriculture* 17(10): October 1991.

[3] Brack, CL 2002. 'Pollution Mitigation and Carbon Sequestration by an Urban Forest.' *Environmental Pollution* 116: 195-2004.

McPherson, EG. Simpson, JR.; Peper, PJ.; Qingfu, X 1999. *Tree Guidelines for San Joaquin Valley*: Available at: <http://www.coloradotrees.org/benefits/TreeGuidelinesforSanJoaquinValley.pdf>

[4] Stebbin, J and Batrouney, T 2007, *Beyond the death of a child Social Impacts and economic costs of the death of a child* Available at: [http://www.compassionatefriendsvictoria.org.au/reports/FINAL%20TCF%20Summary%20Report\\_19Jul07.pdf](http://www.compassionatefriendsvictoria.org.au/reports/FINAL%20TCF%20Summary%20Report_19Jul07.pdf)

[5] Marsden, D 2009, *Assessment of Hill's Weeping Fig Ficus microcarpa var. hillii In Civic Cultural Precinct, Laman Street Cooks Hill, Newcastle*

Treelogic, 2009, *Arboriculture Statement Quantified Tree Risk Assessment Fig trees in Laman Street, Cooks Hill – Newcastle*

## **Current Measures**

Quantified Tree Assessment Risk Assessment reports have identified two main risks related to the Hills Fig Trees in Laman Street:

- Risk of tree failure in high wind – this risk is addressed by closing the road when winds exceed 80 km per hour;
- Risk of tree failure in moderate wind combined with rain – the potential for injury or damage under these conditions depends on the number of people and the duration of stay under the canopy.

To address this risk, Council has put in place a number of measures, including:

- Closing Laman Street to parking and east bound traffic
- Removing the seats in Civic park underneath or near the trees
- Placing signs warning people not to shelter under the trees
- Modifying the signs in the park and Laman Street to warn of risk
- Increasing the number of signs.

Council staff have noted that the closure of the Street to parking and east bound traffic has given rise to the community “reclaiming” the street with a more relaxed ambience within the Laman Street space.

In addition there have been concerns expressed relating to the availability of parking for community members accessing the Library and Art Gallery. This is a particular issue for people with a disability, parents and guardians with young children and for older members of the community.

## **Next Steps – Stage 2**

The objective of this stage of the project has been to provide a framework for assessing the issues relating to the Fig Trees and to identify stakeholders in the population who may be affected.

It is proposed that Council provide feedback to the consultant on this Social Impact Assessment Framework prior to proceeding to Stage 2.

The objective of this second stage is to develop and present a social analysis of the risks and benefits and opportunities that options in relation to the Fig Trees could create including the assessment of overall community benefit and risk options.

It is proposed that Stage 2 be informed by the use a Social Impact “matrix” as part of the Council Design Workshop. This approach accords social issues equivalent recognition with financial issues with the matrix being completed by including stakeholder views as well as research findings.

The options to be considered would be determined by the Design Workshop. The stakeholders attending the Design Workshop and Council professional staff will be actively involved in this process.

Stage 2 will include consideration of:

- Issues relating to particular groups within the community
- Identification of opportunities and constraints
- Identification of the positive and negative impacts
- Consideration of key strategies to address the social sustainability of the community including how any potential negative impacts will be minimised or investigated
- Provide advice on criteria to be met in terms of future planning
- Develop an outcomes monitoring process.

# Attachment 1

## Bibliography

Brack, CL 2002, 'Pollution Mitigation and Carbon Sequestration by an Urban Forest.' *Environmental Pollution* 116: 195-200

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<http://warnell.forestry.uga.edu/service/library/index.php3?docID=124&docHistory%5B%5D=2>

[Note: Reference for most of the material for this article is 'Quantifiable Urban Forest Benefits and Costs: Current Findings and Future Research' in a white paper entitled *Consolidating and Communicating Urban Forest Benefits*. Davey Resource Group, Kent OH 1993.]

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## **Attachment 2**

### **Summary of Selected Literature Relating to the Social Impact of Trees**

A variety of literature sources were researched including professional journals, on-line publications and web sites. The sources identified were largely from internet-based research. The objective of this exercise was to scan a range of literature to inform the development of the Social Impact Framework.

A listing of authors and titles is provided at Attachment 1.

An illustration of the forms of benefits outlined in the literature is provided overleaf through a brief summary of selected articles:

Kuo, FE, 2003, 'Social Aspects of Urban Forestry. The Role of Arboriculture in a Healthy Social Ecology.' *Journal of Arboriculture* 29 (3): May 2003

This study reports on evidence from studies involving over 1,300 person–space observations, 400 interviews, housing authority records and housing records, and 2 years of police crime reports. Key findings include:

- “Trees and grass cover were linked with greater use of residential outdoor spaces by adults and children, healthier patterns of children’s outdoor activity, more social interaction among adults, healthier patterns of adult-child interaction and supervision, stronger social ties and greater resource sharing among adult residents, greater sense of safety and adjustment, lower levels of graffiti and other signs of social disorder, fewer property crimes, and fewer violent crimes.
- At present, the most ready explanation for a connection between trees and social ecosystem health lies in a straightforward extension of defensible space theory. Defensible space theory suggests that vital, well-used residential spaces are key to the development of social ties and discouragement of potential perpetrators because they provide opportunities for informal social contact among neighbours and introduce informal surveillance. Our findings suggest that the presence of trees can be a decisive factor in the extent to which residents actually use and “take ownership of” residential outdoor spaces. In other words, successful residential outdoor spaces are pivotal in the healthy social ecology of a community, and trees are a key element in creating successful residential outdoor spaces.....
- One striking implication of this body of work is that the location of trees matter at a surprisingly fine-grained scale.....
- To the extent that greening is carried out in a way that respects residents’ choices and values with respect to the public and private spaces in their neighbourhood, it seems more likely to foster the kinds of social control so effective to deterring crime.” (p153 -154)

Dwyer, JF, Schroeder, HW and Gobster, PH, 1991, 'The Significance of Urban Trees and Forests: Toward a Deeper Understanding of Values'. *Journal of Arboriculture* 17(10): October 1991.

The paper finds:

"In sum, urban trees are living, breathing organisms with which people feel a strong relationship, and in our planning and management we should not think of them just as air conditioners, providers of shade, and ornaments in the urban system. Failure to recognize the deep significance of trees to urbanites will most likely result in less effort being given to tree planting, care, and protection than the public desires." (p283-284)

- "Ties between people and trees are associated with traditions, symbolism, and the need to 'get involved' at the local level to sustain or enhance the environment for present and future generations." (p276)
- Trees have many different values to people – what people value is often not the tangible benefit such as energy savings or property values but rather the experiences that tree provides.
- The paper examines research on the significance of trees and identifies a number of themes concerning the links between people and trees.

#### Sensory Dimension of Trees

"Trees can have a strong, relaxing effect on people." The paper reports on a series of studies that found that "individuals who viewed urban scenes with vegetation had slower heartbeats, lower blood pressure, and more relaxed brain wave patterns than individuals who viewed scenes without vegetation." (p278)

#### Symbolic Values of Trees

Trees are carriers of symbolic meaning – the sheltering nature of trees – unique appearance and idiosyncrasies

Trees as a religious symbols often compared to places of worship

Brack, CL. 2002, 'Pollution Mitigation and Carbon Sequestration by an Urban Forest.'  
*Environmental Pollution* 116: 195-200

The benefits of urban trees are identified:

*Benefits relating to pollution mitigation*

- + Amelioration of urban climate extremes
- + Mitigation of urban heat islands
- + Store and sequester carbon
- + Reduce noise pollution
- + Improve air quality
- + Improve water quality
- + Lower temperatures of parked cars
- + Reduce volatilization of bitumen
- + Reduce consumption of electricity for heating and cooling
- + Reduce need to invest in new power facilities

*Other benefits*

- + Aesthetic contribution, scenic beauty, visual amenity
- + Architectural enhancement of buildings
- + Improve property values
- + Increase privacy, barrier against unpleasant/stressful scenes
- + Control urban glare and reflection
- + Improve general liveability and quality of urban life
- + Increase tourism
- + Provide opportunities for outdoor recreation and enjoyment
- + Contribute to human health and relaxation, reduce stress and anxiety levels
- + Attract birds and other wildlife
- + Act as a source of specialty timbers
- + Act as a source of general timbers

Brack also notes that most of the benefits are related to size with larger trees tending to “extract and store more carbon dioxide from the atmosphere and have a greater leaf area to trap air borne pollutants, cast shade, and intercept or slow rainfall run-off.”

Coder, KD *Identified Benefits of Community Trees and Forests* Available from:  
<http://warnell.forestry.uga.edu/service/library/index.php3?docID=124&docHistory%5B%5D=2>

Note: Reference for most of the material for this article is ‘Quantifiable Urban Forest Benefits and Costs: Current Findings and Future Research.’” In a white paper entitled *Consolidating and Communicating Urban Forest Benefits*. Davey Resource Group, Kent OH 1993. pp 25.

A comprehensive list of benefits is provided under the following heads of consideration:

- Shade
- Wind Control
- Active Evaporation
- Air Quality
- Oxygen Production
- Pollution Reduction
- Carbon Dioxide Reduction
- Hydrology
- Water Run-off
- Water Quality / Erosion
- Noise Abatement
- Glare Reduction
- Animal Habitats
- Economic Stability
- Property Values
- Aesthetics
- Visual Screening
- Health
- Human Social Interactions

Moore, GM 2009, *Urban Trees: Worth More Than They Cost* Available from:

<http://www.aila.org.au/LApapers/papers/trees/Moore-UrbanTreesWorthMoreThantheyCost.pdf>

Moore provides an analysis of the economic and ecological service benefits to urban trees to society.

Estimates of various environmental economic values for 100,000 large mature trees growing in an Australian city are provided:

**Estimates of various environmental economic values for urban trees growing in Australian Cities**

| Parameter                                | Value per tree                    | Quantity           | Unit Price AUD \$                                   | Value AUD\$  |
|--|-----------------------------------|--------------------|---|--------------|
| Carbon sequestered in trees              | 12.5 tonne                        | 1.25 million tonne | \$20 per tonne                                      | \$25m        |
| Street Tree value                        | \$AUD 200 pa                      |                    |   | \$20m pa     |
| Electricity saving                       | 30KWh                             | 3 million kWh      | \$0.17 per kWh                                      | \$510,000pa  |
| Carbon emission saved                    | 1.2Kg for each kWh                | 3,600 tonne        | \$20 per tonne                                      | \$72,000 pa  |
| Water saving from electricity generation | 30 kWh per tree at 100L per kWh   | 300 mill L         | \$1.50 per kilolitre                                | \$45000      |
| Prolonged life of bitumen footpaths      | \$450 per m2 for life of 20 years |                    | \$225 per m2 for an extended life of 50% (10 years) | \$47,250,000 |

Source: Moore, GM 2009, *Urban Trees: Worth More Than They Cost*, Refer: Figure 4

Moore notes that these estimates do not include other benefits such as human health and reduced vandalism and violence.

McPherson, EG Simpson, JR; Peper, PJ; Qingfu, X 1999. *Tree Guidelines for San Joaquin Valley*: Available from

<http://www.coloradotrees.org/benefits/TreeGuidelinesforSanJoaquinValley.pdf>

This Guidebook identifies the following benefits of trees:

- Energy impacts – lowering temperatures
- Air Quality impacts – absorbing gaseous pollutants, intercepting particulate matter, releasing oxygen through photosynthesis, transpiring water and shading surfaces (lowering local air temperatures and reducing ozone levels).
- Water Quality Impacts – intercepting and storing rainfall on leaves and branch surfaces (reducing runoff volumes), increasing the capacity of soils to infiltrate rainfall, reducing soil erosion.
- Social Impacts – abate noise, create wildlife habitat
- Reduce exposure to ultraviolet light – lowering risk to of skin cancer and cataracts
- Provide pleasure through feelings of relaxation or connection to nature
- Provided important settings for recreation

The following costs are identified:

- Cost of planting
- Tree trimming
- Tree removal and disposal
- Pavement damage
- Flooding caused by leaf litter
- Green waste disposal
- Irrigation costs

The Guidebook goes on to develop a formula for determining the cost and benefit of trees.

George Morris Centre, 2007, *Literature Review of Documented Health and Environmental Benefits Derived from Ornamental Horticultural Products*: Available from: [www.agrireseau.qc.ca/.../Reports Ornamentals Health Benefits.pdf](http://www.agrireseau.qc.ca/.../Reports%20Ornamentals%20Health%20Benefits.pdf)

The following is a summary of the benefits as outlined in this literature review:

#### Economic

- + Reduce energy costs (heating and cooling)
- + Improve property values (residential and business)
- + Enhance beauty of buildings and communities
  - Aesthetic contribution
  - Improved privacy and security
- + Assist municipalities in reducing maintenance costs and deriving new economic benefits including economic spin-offs - increased tourism

#### Environmental

- + Moderate urban climate extremes
- + Mitigate urban heat islands
- + Produce oxygen
- + Sequester carbon
- + Ameliorate pollution:
  - Improve air quality (indoor and outdoor)
  - Remove contaminants from soil
  - Improve water quality
  - Treat sewage and wastewater
- + Improve water management (flood control) and erosion control
- + Reduce impacts of weather through windbreaks and shelterbelts
- + Reduce noise pollution
- + Control urban glare and reflection
- + Attract urban birds and other wildlife

## Lifestyle

- + Reduce stress and improve productivity (workplace, schools)
- + Introduce calming effects and reduce discomforts
- + Quicker recovery (hospitals)
- + Improve life satisfaction and well-being:
  - Increase positive emotions
  - Improve general quality of life in urban settings
  - Create pride in community through community gardens
  - Attention and concentration improvements for children
- + Reduce aggression and violence
- + Provide space for recreation
  - Enhance sport field safety
  - Encourage healthy active and passive lifestyle pursuits

Kane B, *Value, Benefits and Costs of Urban Trees*: Available at:

<http://pubs.ext.vt.edu/420/420-181/420-181.pdf>

Kane (the Assistant Professor, University of Massachusetts) notes that:

- Trees provide ecological services that include 1) reduced air pollution, 2) storm-water control, 3) carbon storage, 4) improved water quality, and 5) reduced energy consumption.
- “Benefits to society are harder to quantify, but that does not mean they are less important than the ecological services that trees provide. Societal benefits include increased job satisfaction, faster recovery time for hospital patients, and improved child development. For example, hospital patients who have a view of trees out of their window recovered more quickly than patients who did not (Ulrich 1984). Similarly, employees who could look out their office windows and see trees and nature were happier at work (Miller 1997). Both of these have dollar values, like lower health-care costs and increased worker productivity, but it is harder to assign an exact dollar amount to them. Properly placed and maintained trees have even been shown to reduce crime (Kuo et al. 1998) and enhance cognitive development in children (Wells 2000).” (p,1)