Environment and Recreation Committee Terms of Reference

The Environment and Recreation Committee, being guided by the principles of ecologically sustainable development and maximising local passive and active recreation opportunities, deals with, but will not be limited to, the following:

Environment Policy development on:
- Council’s Sustainability Strategy
- Environmental health
- Waste minimisation and resource recovery
- Stormwater management
- Corporate Sustainability
- Trees and open space
- Landscaping
- Environmental education
- Pollution monitoring
- Biodiversity conservation and enhancement

Recreation Policy development on:
- Open space plans of management and masterplans
- Management of companion animals in open space
- Management and provision of open space, including small parks and sports fields
- Management and provision of recreational facilities
- Provision of recreational programs and services

Chairperson: Cr Rochelle Porteous  
Deputy Chairperson: Cr Michele McKenzie

Acknowledgement of Country

I acknowledge the Gadigal and Wangal people of the Eora nation on whose Country we are meeting today, and their elders past and present.
NOTICE is hereby given that a meeting of the Environment & Recreation Committee will be held in the Supper Room, Leichhardt Town Hall on Wednesday, 3 February 2010 at 6:30pm.

Peter Head
General Manager

AGENDA

Acknowledgement of Country

1. Apologies
2. Minutes of Previous Meeting: 2 December 2009  P04
3. Summary of Resolutions  P10
4. Correspondence
5. Reports from the Community
6. Policy Items Environment
   6.1 Transition Leichhardt  P22
   6.2 Council Facilitation of Energy Efficiency Audits for Small/Medium Businesses in Leichhardt  P26
   6.3 Footprints Eco Festival – to be tabled at the meeting
7. Policy Items Recreation
   7.1 Urban Forest Strategy Revised Sections 3 - Benefits of Urban Trees and 10 - Risk Management of Trees  P30
8. Reports on Major Projects: Environment and Recreation – Nil
9. Other Business
   9.1 Guest Speaker Mr Michael Roche – re Farmers’ Market in Whites Creek Valley Park, Lilyfield / Annandale
   9.2 Verbal Report – Feral/Stray Cat Control by David Eckstein
   9.3 Verbal Report – Mosman LEP Zoning of Bushland Areas by Gill Dawson
10. Next Meeting – 7 April 2010
# LEICHHARDT MUNICIPAL COUNCIL

## REPORT

<table>
<thead>
<tr>
<th>DIVISION:</th>
<th>ENVIRONMENTAL AND COMMUNITY MANAGEMENT</th>
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<tr>
<td>SUBJECT:</td>
<td>ENVIRONMENT AND RECREATION COMMITTEE MINUTES</td>
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<tr>
<td>AUTHOR:</td>
<td>GILL DAWSON MANAGER ENVIRONMENT AND URBAN PLANNING</td>
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<tr>
<td>FILE REF:</td>
<td>F05/00015-5</td>
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<td>25 JANUARY 2010</td>
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### DIRECTOR’S SUMMARY - ORGANISATIONAL IMPLICATIONS

<table>
<thead>
<tr>
<th>Financial Implications:</th>
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<td>Policy Implications:</td>
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</table>
| Leichhardt 2020+ Strategic Plan Objective: | Community Well-being  
Accessibility  
Place where we live and work  
A sustainable environment  
Business in the Community  
Sustainable Services and Assets |
| Staffing Implications:   | Nil |
| Notifications:           | Nil |
| Other Implications:      | Nil |
1. **Purpose of Report**

To advise Council of the status of Minute Recommendations of the Environment & Recreation Committee held on 2 December 2009 including the amendment made at its Ordinary Council meeting held on 8 December 2009.

**C602/09 RESOLVED PLATE/PORTEOUS**

That Council adopt the minutes of the Environment & Recreation Committee held on 2 December 2009 with the accompanying recommendations as listed below subject to the following change to Item 6.2 as shown below:

**Item 6.2 – Advice of Council Resolution Regarding Supported Living in Leichhardt**

*That points 6 & 7 of the Committee’s recommendation not be adopted, and only points 1 – 5 to be adopted and actioned.*

2. **Recommendation**

That Council adopt the minutes of the Environment & Recreation Committee held on 2 December 2009 with the accompanying recommendations including the amendment per Council resolution (C602/09).
MINUTES of the Environment and Recreation Committee of Leichhardt Municipal Council held in the Supper Room on 2 December 2009.

Present at the meeting: Cr Rochelle Porteous (Chair), Cr Daniel Kogoy, Cr Gordon Weiss, Cr John Stamolis, Cr Cassi Plate.


Staff Present: Aaron Callaghan, Leisha Deguara, Gill Dawson, Vince Cusumano.

Meeting Commenced: 6.35pm

ACKNOWLEDGEMENT OF COUNTRY:

I acknowledge the Gadigal and Wangal people of the Eora nation on whose Country we are meeting today, and their elders past and present.

Cr Rochelle Porteous performed acknowledgement of country in the capacity as chair.

BUSINESS:

ITEM 1
APOLOGIES

ERC60/09 RECOMMENDED

That apologies be accepted for the non attendance of Cr Vera-Ann Hannaford and David Eckstein.

ITEM 6.2 (brought forward)
ADVICE OF COUNCIL RESOLUTION REGARDING SUPPORTED LIVING IN LEICHHARDT

ERC61/09 RECOMMENDED

That

2. Council receive and note the report on the policy considerations relating to the uses of 35, 37 and 39 White Street.


4. Council refers this matter to the relevant State and Federal ministers for their action.

5. That Council addresses considerations of social justice in its residential (non-caretaker) leases, noting that Council has a number of residential properties that Council officers be requested to develop a policy addressing social justice considerations in it’s leasing of residential properties in Leichhardt.

**POINTS 1 – 5 WERE CARRIED UNANIMOUSLY**

6. The Committee is concerned that any proposal which requires rezoning the land at 35, 37 and 39 White Street for purposes other than public open space would result in a loss of public open space which contradicts the intent for which the houses were purchased for in the first place.

7. The Committee does not support any changes to the WCVP Plan of Management that would result in a loss of public open space.

**POINTS 6 – 7 WERE CARRIED BUT NOT UNANIMOUSLY**

*Note: At the 8 December 2009 Ordinary meeting, Council did not adopt points 6 & 7 above, but they are shown here as a record of the Committee’s recommendation.*

The following documents were tabled at the meeting in relation to this item:

1. Unite the Park Submission

2. Copy of petition sent to Senator Brown in relation to demolition of Department of Planning Houses on White Street.

**ITEM 2**

**MINUTES OF THE PREVIOUS MEETING: 7 October 2009**

**ERC62/09 RECOMMENDED**

1. That Council adopt the minutes of the Environment and Recreation Committee meeting held on 7 October 2009 with the accompanying amendment.
2. That Gillian Leahy’s presence at the meeting be recorded.

**ITEM 5** *(brought forward)*

**REPORTS FROM THE COMMUNITY**

**ERC63/09 RECOMMENDED**

1. Verbal report from the Community - “Transition Leichhardt”
   by Sky de Jersey and Heather Formaini

That a report to come back to the Committee on what other Councils are doing in terms of Transition Towns and that Council work with the Transition Town group on providing a link on the Council web site for public information.

**ITEM 3**

**SUMMARY OF RESOLUTIONS**

**ERC64/09 RECOMMENDED**

That the information in the Summary of Resolutions be received and noted with the following amendment:

**ERC19/09 – Feral/Stray Cat Control**

- That a verbal update be provided at the February 2010 Environment & Recreation Committee meeting.

**ITEM 4**

**CORRESPONDENCE – Nil**

**ITEM 6.1**

**CLIMATE CHANGE TASKFORCE MINUTES – 4 NOVEMBER 2009**

**ERC65/09 RECOMMENDED**

That the minutes of the Climate Change Taskforce – Corporate Strategy and Community Strategy meetings held on 4 November 2009 be noted.
ITEM 7.1
URBAN FOREST STRATEGY SECTIONS 3 & 10

ERC66/09 RECOMMENDED

That the report on Urban Forest Strategy Sections 3 & 10 be deferred to the February 2010 Environment & Recreation Committee meeting.

ITEM 7.2
VERBAL REPORT – RELOCATION OF THE PALMS FROM VICTORIA RD

ERC67/09 RECOMMENDED

That the Washingtonia palms be relocated to the RTA land on corner of City West Link and Norton Street.

ITEM 9
OTHER BUSINESS

ERC68/09 RECOMMENDED

ITEM 9.1
FREQUENCY OF ENVIRONMENT & RECREATION COMMITTEE MEETINGS

That there be no change to the frequency of the meetings of the Environment & Recreation Committee.

ITEM 9.2
The Committee congratulate Council’s Waste and Education Officer on the “Growing Food in the City” event held at the Whites Street Community Centre on 17 October 2009.

ITEM 9.3
That a verbal report be brought back to the February 2010 Meeting on the Mosman LEP zoning of bushland areas.

ITEM 10
NEXT MEETING

The next meeting will be held on Wednesday, 3 February 2010 at 6:30pm.

Meeting closed at 8.50 pm
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<td>MANAGER ENVIRONMENT AND URBAN PLANNING</td>
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<td>Community Well-being</td>
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<td>Accessibility</td>
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<td></td>
<td>Place where we live and work</td>
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<td>A sustainable environment</td>
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<td>Sustainable Services and Assets</td>
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<td>Other Implications:</td>
<td>Nil</td>
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</table>
1. **Purpose of Report**

To advise Council of the status of the Environment and Recreation Committee Resolutions of December 2009.

2. **Recommendations**

That the information be received and noted.
<table>
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<tr>
<th>Environment &amp; Recreation Committee December 2009</th>
<th>SUMMARY OF RESOLUTIONS</th>
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</table>
| **ERC35/06 - BRIDGEWATER PARK – POTENTIAL SPORTING FIELD** | 3. That a Draft Plan of Management for Bridgewater Park be developed within the next 12 months which includes provision for low impact sporting activities, landscaping improvements and public amenities.  
5. That Council look at options for the inclusion of native corridors connecting through Bridgewater Park. | 3. The preparation for the draft POM has commenced.  
5. To be addressed as part of the concept in the development of a POM for the park. | Aaron Callaghan |
| **ERC 57/07 LOCAL GOVERNMENT EMISSIONS TRADING SCHEME** | 4. That a report on the progress of LGETS be brought back to Council prior to the completion of the transitional year after which Council will decide whether to continue for the remaining years of the trial period. | 4. Report adopted by Council – Dec Ordinary Meeting with resolution: "that in developing its corporate greenhouse gas abatement strategy council assess the value of ongoing participation in LGETS with a decision to be made no later than April 2010”  
David Eckstein attending LGETS meeting at Marrickville on 8 Feb 2010. | David Eckstein  
Team Leader  
Environmental Strategy |
| **ERC 16/08 COMMUNITY ORCHARD PROPOSAL, WHITES STREET** | That funds be set aside for the establishment of an orchard, chicken run and bee hive in the 2008-9 budget in accordance with the adopted plan of management for White Creek Valley Park (noting a slight variation to the fence line). | Council is still awaiting information from the Department of Planning on the disposal of these properties to Council and contamination issues that may be associated with these areas.  
Further to the above Council has put in a request to the Department of Planning under FOI as to when handover will occur.  
The Biodiversity Officer will develop estimates to establish these facilities in White St properties as shown on the WCVP POM. | Vince Cusumano  
Manager Parks and Streetscapes |
## Environment & Recreation Committee Agenda – February 2010

<table>
<thead>
<tr>
<th>ERC18/08 COMPANION ANIMAL ACCESS BLACKMORE PARK</th>
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<tbody>
<tr>
<td>2. Council publicly exhibit the new regulations pertaining to Blackmore Park for a period of 28 days following which the introduction of an enforcement regime is implemented which includes the introduction of new signage and compliance works to educate companion animal owners of their responsibilities.</td>
</tr>
<tr>
<td>This was amended as follows at Ordinary Council on 24 June 2008: That the decision with regards to access changes to Blackmore Oval be reviewed to ensure pedestrian access is retained and no action taken in this regard until a full report is brought back to the July Council Meeting on how this can be achieved.</td>
</tr>
<tr>
<td>If handover is to occur in 2010 then these will be included in the 2010 – 2011 budget deliberations.</td>
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<tr>
<td>Aaron Callaghan</td>
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<thead>
<tr>
<th>ERC50/08 URBAN FOREST POLICY UPDATE</th>
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<tr>
<td>2. That sections of the proposed Urban Forest Strategy be presented to the Environment and Recreation Committee over the next year for discussion and comment.</td>
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<tr>
<td>2. Sections of the proposed Urban Forest Strategy will be presented over the next year as per the Committee’s adopted timetable. Report on revised sections 3 and 10 to February 2010 Committee meeting.</td>
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<tr>
<td>Vince Cusumano</td>
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<tr>
<td>Environment &amp; Recreation Committee December 2009</td>
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<td><strong>ERC12/09</strong>&lt;br&gt;ITEM 2&lt;br&gt;MINUTES OF THE PREVIOUS MEETING: 4 February 2009</td>
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<td><strong>ERC33/09</strong>&lt;br&gt;June 2009</td>
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<td><strong>ERC39/09</strong>&lt;br&gt;BIRCHGROVE TREE</td>
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<td>Environment &amp; Recreation Committee December 2009</td>
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| ERC47/09 UPDATE ON CELTIS SINENSIS (August 09) | 1. That Biodiversity Officer to produce a *Celtis sinensis* information leaflet for targeted distribution to residents. The leaflet to include alternative trees suitable for planting which are good food and habitat sources for small birds and possums.  
2. That a programme including the issuing of control notices, community education and eradication measures to control *Celtis sinensis* be implemented as outlined in Section 4 of this report.  
3. That Biodiversity Officer to be authorised to issue weed control notices.  
4. That the Light Rail feasibility study address the issue of the greenway project, protection of small bird habitats and the issue of *Celtis sinensis* removal as part of the brief. | 1, 2 & 3 Awaiting declaration by DPI.  
A draft brochure is being developed in anticipation of declaration by DPI. Brochure will be presented to Environment & Recreation Committee prior to being finalised. | Doug Anderson |
| ERC48/09 NATIVE PLANTINGS IN VERGES | 1. That Council initiates a pilot programme in cooperation with residents to determine community interest in, and likely acceptance of, a broadscale native verge planting programme and that the program be considered as part of the Living Streets | 1, 2 and 3. Being considered as part of Living Streets programme.  
A meeting will be scheduled with Phillips Marler to determine scale of native plantings in verges | Vince Cusumano  
Doug Anderson |
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<tr>
<th>SUMMARIZED RESOLUTIONS</th>
<th>ACTION/TAKEN PLANNED &amp; ESTIMATED COMPLETION DATE</th>
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<tbody>
<tr>
<td>1. That an immediate exclusion zone be established around the Forest Gum Tree advising the public of the safety issue.</td>
<td>1. Exclusion zone established with temporary fence. Parks and Technical Officer to prepare costings and report to Feb 2010 Committee meeting re adoption of Botanical Gardens’ fence for installation in March 2010.</td>
<td>Vince Cusumano Heidi Webb</td>
</tr>
<tr>
<td>2. That Council carry out community consultation in a selected street to gauge the likely participation and cost implications to undertake and adopt-a-verge programme of planting native plants instead of grass and that the results of this consultation be brought back to the Environment and Recreation Committee.</td>
<td>as part of Living Streets programme. A Draft programme will be prepared in March for an adopt a verge trial. Report to the April 2010 Committee meeting on the selected streets, draft programme including consultation strategy for the programme.</td>
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<tr>
<td>3. That the street chosen for the pilot programme will be derived from the current footpath replacement programme.</td>
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**BERCHGROVE PARK – REPORT ON FOREST REDGUM FROM THREE WISE MEN PTY LTD**

| ERC51/09 BALLAST POINT PARK | That a report be brought back to Council and the Committee on management arrangements (if any) associated with Ballast Point Park, SHFA and Council in relation to ongoing management of the park. | Council has formally written to SHFA requesting a meeting to discuss management of the new park. Awaiting formal response for SHFA on this matter. No formal response has been received to date and this was an issue that the Mayor was going to follow up personally with SHFA. | Aaron Callaghan |

**OFFICER**

- Vince Cusumano
- Heidi Webb
- Aaron Callaghan
<table>
<thead>
<tr>
<th>ERC59/09 URBAN FOREST STRATEGY PART 8 – STREET TREE SEQUENTIAL REMOVAL AND REPLACEMENT PROGRAMME</th>
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<tbody>
<tr>
<td>ERF59/09</td>
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**DECEMBER 2009 RESOLUTIONS**

**ERC61/09 ADVICE OF COUNCIL RESOLUTION REGARDING SUPPORTED LIVING IN LEICHHARDT**

That

2. Council receive and note the report on the policy considerations relating to the uses of 35, 37 and 39 White Street.

This matter was referred to the Environment & Rec Committee by the CSSFC and will be addressed through that Committee. A report is being prepared for the May 2010 CSSFC meeting. (CSSFC119/09 and C526/09).

OFFICER | Social Planning and Community Development

1. Noted.  
2. Noted
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<td>4.</td>
<td>Council refers this matter to the relevant State and Federal ministers for their action.</td>
<td>4. Noted</td>
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<td>5.</td>
<td>That Council addresses considerations of social justice in its residential (non-caretaker) leases, noting that Council has a number of residential properties that Council officers be requested to develop a policy addressing social justice considerations in it’s leasing of residential properties in Leichhardt.</td>
<td>5. Noted</td>
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<td>POINTS 1 – 5 WERE CARRIED UNANIMOUSLY</td>
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<td>6.</td>
<td>The Committee is concerned that any proposal which requires rezoning the land at 35, 37 and 39 White Street for purposes other than public open space would result in a loss of public open space which contradicts the intent for which the houses were purchased for in the first place.</td>
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<td>7.</td>
<td>The Committee does not support any changes to the WCVP Plan of Management that would result in a loss of public open space.</td>
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<td>Note: At the 8 December 2009 Ordinary meeting, Council did not adopt points 6 &amp; 7 above, but they are shown here as a record of the Committee’s recommendation.</td>
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<td>The following documents were tabled at the meeting in relation to this item:</td>
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<tr>
<td>1. Unite the Park Submission</td>
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<td>2. Copy of petition sent to Senator Brown in relation to demolition of Department of Planning Houses on White Street.</td>
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<td></td>
<td>Gill Dawson</td>
</tr>
<tr>
<td>1. That Council adopt the minutes of the Environment and Recreation Committee meeting held on 7 October 2009 with the accompanying amendment.</td>
<td>1. Noted</td>
<td></td>
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<tr>
<td>2. That Gillian Leahy’s presence at the meeting be recorded.</td>
<td>2. Actioned</td>
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<tr>
<td>ERC63/09 REPORTS FROM THE COMMUNITY</td>
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<td>Leisha Deguara</td>
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<tr>
<td>1. Verbal report from the Community - “Transition Leichhardt” by Sky de Jersey</td>
<td>That a report to come back to the Committee on what other Councils are doing in terms of Transition Towns and that Council work with the Transition Town group on providing a link on the Council web site for public information.</td>
<td>Report prepared to the February Committee meeting.</td>
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<td>and Heather Formaini</td>
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</table>
| **ERC64/09** SUMMARIES OF RESOLUTIONS            | That the information in the Summary of Resolutions be received and noted with the following amendment:  
  
  **ERC19/09 – Feral/Stray Cat Control**  
  - That a verbal update be provided at the February 2010 Environment & Recreation Committee meeting. | Verbal update will be given by the Team Leader Environment Strategy at the February 2010 Committee meeting. | David Eckstein |
| **ERC66/09** URBAN FOREST STRATEGY SECTIONS 3 & 10 | That the report on Urban Forest Strategy Sections 3 & 10 be deferred to the February 2010 Environment & Recreation Committee meeting. | Actioned – report prepared to the February 2010 Committee meeting. | Vince Cusumano |
| **ERC68/09** OTHER BUSINESS                      |                         |                                               |         |
| **ITEM 9.1** FREQUENCY OF ENVIRONMENT & RECREATION COMMITTEE MEETINGS | **ITEM 9.1**  
That there be no change to the frequency of the meetings of the Environment & Recreation Committee. | **ITEM 9.1** Noted | Gill Dawson |
|                                                   | **ITEM 9.2**  
The Committee congratulate Council’s Waste and Education Officer on the “Growing Food in the City” event held at the Whites Street Community Centre on 17 October 2009. | **ITEM 9.2** Actioned | Gill Dawson |
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<td>ITEM 9.3</td>
<td>That a verbal report be brought back to the February 2010 Meeting on the Mosman LEP zoning of bushland areas.</td>
<td>9.3 Verbal report to the February 2010 Committee meeting by the Manager, Environment and Urban Planning.</td>
<td>Gill Dawson</td>
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<td>Policy Implications:</td>
<td>Nil</td>
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<tr>
<td>Strategic Plan Objective:</td>
<td>Develop leading models and programs to build the strength of our community. Develop our commitment and capacity to consistently support environmental sustainability. Minimise our impacts on the environment.</td>
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<td>Staffing Implications:</td>
<td>Staff time involved coordinating support for Transition Leichhardt group.</td>
</tr>
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<td>Notifications:</td>
<td>Nil</td>
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<td>Other Implications:</td>
<td>Nil</td>
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1. **Purpose of Report**

The purpose of this report is to advise of the intention of local community members to create a ‘Transition Town’ group in Leichhardt and to establish avenues through which Council can support this emerging group.

2. **Recommendations**

That the information in this report be received and noted.

3. **Background**

A verbal report was received at the 2 December 2009 Environment and Recreation Committee meeting from two community members, Sky de Jersey and Heather Formaini, about the Transition Town movement and plans to establish a Transition Town group in Leichhardt called ‘Transition Leichhardt’.

A recommendation was made at the Committee meeting requesting a formal report regarding actions other Councils have taken to support Transition Towns and how Leichhardt Council can support Transition Leichhardt.

4. **Report**

The Transition Town concept

The Transition Town movement started in Totnes, England in response to the twin pressures of Climate Change and Peak Oil. Peak Oil is the concept that global demand and reliance on oil reserves is increasing, while the supply of cheap and readily accessible sources of oil is already approaching or beyond their peak. Transition Towns aim to alter this paradigm to realign towns' futures, and start the ‘transition’ to community resilience, low energy futures (commonly known as ‘energy descent’) and reduce carbon emissions.

The Transition Town framework functions at the community level, providing community engagement pathways often resulting in far-reaching actions and outcomes. The successes of groups are wide-ranging and depend greatly upon the context of the town and group themselves. Other Transition Town groups have achieved a variety of outcomes, including the formation of farmers markets, community gardens and other local growers initiatives, the establishment of buyers groups for efficient hot water systems or energy systems, hosted community talks, workshops or events, creation of local (town-specific) currency, development of Energy Descent Action Plans and the establishment of eco and community housing projects.

Further information about the Transition Towns initiative, including a background ‘primer’, movie, books and general information is available at [http://transitiontowns.org/](http://transitiontowns.org/)
Registered Transition Towns
The first Transition Town was established in Totnes, England in 2006 and at the time of writing this report, internationally there are 265 (two hundred and sixty five) towns and suburbs within metropolitan areas that are officially registered as Transition Towns.

In Australia, the first location where the Transition Town concept commenced was the Sunshine Coast, in 2007. There are now 27 (twenty seven) registered Transition Towns in Australia. At the time of writing this report, the following Transition Towns were registered in NSW; Armidale, Barraba, Bellingen, Epping, Newcastle, Parramatta, Sydney, North Sydney, Blue Mountains and Wingecarribee. Transition Leichhardt is not yet officially registered.

Local Government support
While the Transition Town framework recognises the importance of relations between a Transition Town group and the local authority, Council’s role is seen to be that of “supporting, not driving”. Ultimately, Transition Towns are run by the community for the community, yet relationship with, and support from Council is essential for Transition Towns to function.

There are a number of ways in which other Local Authorities have supported Transition Towns. Examples are provided below:

- Provision of venues, equipment, meeting spaces, marketing and development support;
- Sharing ideas, listening, providing advice, contacts or funds;
- Screening movies;
- Support to establish community shared spaces, such as farmers markets and community gardens;
- Council officially endorsing the Transition Town initiative;
- Staff and Councillors exploring Climate Change and Peak Oil implications;
- Staff and Councillors personally joining their Transition Town community.

Transition Town groups also provide input into Council processes. Examples are provided below:

- Transition Town groups providing presentations to senior staff and councillors;
- Transition Town groups providing input into strategic planning documents, such as climate change strategies or planning decisions.

The extent to which local authorities have supported Transition Town groups is dependent upon a variety of matters, including the progress of the group, resources available for support and the level of commitment and political will from the authority.
Leichhardt Council support
As Transition Leichhardt is in a formative stage, Council can provide support to the group to help it become established in the community. In the UK the preferred role for local government in Transition Town initiatives has been one of supporter, not driver. The following methods of support are proposed to support Transition Leichhardt at this early stage of development:

- Promotion of Transition Leichhardt on the Leichhardt Council website, including a brief summary of the group purpose and contact details;
- Provision of meeting spaces upon request, noting that processing of fee waiver applications require adequate planning and time to process;
- Assistance in delivery of a film night (again noting that fee waiver applications require adequate planning and time to process);
- Council considering formal comments from Transition Leichhardt on policy or planning items that go to public exhibition

Depending upon the progress of Transition Leichhardt and the relationship formed through this formative stage of the group, other support mechanisms may be considered in the future.
**LEICHHARDT MUNICIPAL COUNCIL**

**REPORT**

**DIVISION:** ENVIRONMENTAL AND COMMUNITY MANAGEMENT  
**SUBJECT:** COUNCIL FACILITATION OF ENERGY EFFICIENCY AUDITS FOR SMALL/MEDIUM BUSINESSES IN LEICHHARDT  
**AUTHOR:** DAVID ECKSTEIN  
TEAM LEADER - ENVIRONMENT STRATEGY  
**FILE REF:** TBA  
**DATE:** 25 JANUARY 2010  
**WORD PROCESSING REF:** F:\Planning - Administration\Committees\Environment & Rec Committee\2010\1002 - Feb\Agenda\Env & Rec Agenda 030210.doc

**DIRECTOR’S SUMMARY - ORGANISATIONAL IMPLICATIONS**

<table>
<thead>
<tr>
<th>Financial Implications:</th>
<th>Current commitment $2000, additional commitment being considered – budget available – Ecological Footprint funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Implications:</td>
<td>Potential to include this initiative in community stream of Climate Change Strategy that is currently under development</td>
</tr>
</tbody>
</table>
| Strategic Plan Objective:| A Sustainable Environment  
Business in the Community |
| Staffing Implications    | nil |
| Notifications:           | n/a |
| Other Implications:      | 26 |
1. **Purpose of Report**

To describe a Council-driven initiative to improve engagement by small and medium sized businesses around energy efficiency and climate change.

2. **Recommendations**

That the report be received and noted.

3. **Background**

In terms of responsiveness to energy efficiency and climate change issues, the small and medium-sized businesses sector is recognised as one of the very hardest sectors to engage with and to deliver performance improvements. Small to medium business owners and operators are typically consistently busy with day to day logistic and management issues. Rising costs associated with energy supply and usage may frustrate businesses, and individual operators may be personally concerned with climate change, water conservation and other environmental and sustainability matters, but converting concern into practical, on-site energy and water conservation action is often problematic.

4. **Report**

NSW Department of Climate Change, Environment and Water (DECCW) have commenced a service to small businesses whereby heavily subsidised energy audits are undertaken by DECCW accredited assessors – typically persons with engineering and energy-use expertise. The focus is expressly upon achieving efficiencies in electricity (as opposed to gas) usage, as carbon abatement potential is strongest due to the carbon intensity of coal-fuelled electricity production.

Assessors identify ‘no cost’ and ‘low cost’ actions that businesses can take to reduce electricity use. For energy efficiency actions that have pay-back of longer than 2 years DECCW provide a rebate of between $2000 and $5000 (depending on businesses total electricity usage) toward the cost of equipment upgrade or building retrofit in the following areas:

- lighting and skylights
- heating, ventilation, air-conditioning and insulation
- electric motors
- air compressors
- commercial refrigeration
- boilers
• insulation
• hot water systems

The program runs state-wide, but a known hurdle to uptake exists in the form of upfront payment of $50 that businesses need to make to engage an assessor.

The councils of Leichhardt and the City of Canada Bay (already working together on the Sydney Water-sponsored Sustainable Business Officer program) each allocated modest funding ($2000) to enable up to 40 business energy efficiency audits to be undertaken in each of their council areas. The specific intent was to overcome the $50 front end fee that acts as a disincentive to businesses to engage in the first place.

Council is now aware that the local provider of assessments in our area - Blue Green Engineering - has been one of the most effective of DECCW-accredited companies in terms of successfully engaging small businesses to undertake audits.

In the past three months over thirty (30) businesses in Leichhardt have taken up the audit option (see attached list) and Blue Green Engineering confirm that the waiving of the upfront program entry cost has been a significant factor in getting ‘through the door’ of local businesses:

“Feedback received from businesses, with regards to this initiative, was very positive. The Council initiative proved successful - Council’s endorsement of the program added credibility to the program (additional to the NSW DECCW credibility)”

(email correspondence from Blue Green Engineering, January 2010)

5. **Summary/Conclusions**

The small investment made by Council has, to date, proved very effective in getting across the door of small/medium sized businesses to provide energy efficiency services.

Extension of the initiative is being considered. However, for the program to have demonstrable value, implementation of identified actions is critical. Audits, in themselves, do not deliver cost, energy and carbon savings.

During February Council will contact a sub-set of businesses audited to establish whether the audits are resulting in practical energy-efficiency actions. Further, staff will re-contact the primary audit service provider regarding an implementation model they are developing in order to validate continued financial support for the program.
ATTACHMENT 1 – LIST OF LOCAL BUSINESS THAT HAVE HAD ENERGY EFFICIENCY AUDITS UNDERTAKEN UNDER RECENT DECCW PROGRAM

<table>
<thead>
<tr>
<th>suburb</th>
<th>unit no</th>
<th>assessment</th>
<th>completion</th>
<th>name</th>
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</thead>
<tbody>
<tr>
<td>Annandale</td>
<td>17/11/09</td>
<td>26/11/09</td>
<td>Marco Polo Café</td>
<td></td>
</tr>
<tr>
<td>Annandale</td>
<td>17/11/09</td>
<td></td>
<td>Johnston Pharmacy</td>
<td></td>
</tr>
<tr>
<td>Annandale</td>
<td>17/11/09</td>
<td></td>
<td>Chemtest P/L</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td>09/12/09</td>
<td>Starbrew Pty Ltd</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td></td>
<td>Living Silk</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td>09/12/09</td>
<td>Bo Bar Boutique</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td>09/12/09</td>
<td>Sublime Hospitality</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td></td>
<td>Balmain Newsagency</td>
<td></td>
</tr>
<tr>
<td>Balmain</td>
<td>25/11/09</td>
<td>26/11/09</td>
<td>NAHLOUS TRADING TRUST</td>
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</tr>
<tr>
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<td>09/12/09</td>
<td>Hill of Content</td>
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</tr>
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<td>Artson P/L</td>
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<td>Balmain</td>
<td>25/11/09</td>
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<td>The Village Sport</td>
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<td>Balmain</td>
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<td>Circle Café</td>
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<td>New Star Takeaway</td>
<td></td>
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<td>26/11/09</td>
<td>Balmain BBQ Chickens</td>
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<td>Balmain</td>
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<td></td>
<td>Dress Me Darling</td>
<td></td>
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<td>Balmain</td>
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<td>05/12/09</td>
<td>Precious Trinkets and Treasures</td>
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<td></td>
<td>allabout romanas</td>
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<td>02/11/09</td>
<td>Face Accountants</td>
<td></td>
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<td>Balmain</td>
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<td>26/11/09</td>
<td>Miss Saigon</td>
<td></td>
</tr>
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<td>NLPT Balmain</td>
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<td>Florence Travel Goods</td>
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<td>enviro chem</td>
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<td></td>
<td>Braza Churrascaria</td>
<td></td>
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<tr>
<td>Leichhardt</td>
<td></td>
<td></td>
<td>Deliziosa Bakehouse + Café P/L</td>
<td></td>
</tr>
<tr>
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<td>26/11/09</td>
<td>Singarama</td>
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<td></td>
<td></td>
<td>Tancredi Jewellers</td>
<td></td>
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<td>Leichhardt</td>
<td></td>
<td></td>
<td>Bar Dei Castelli</td>
<td></td>
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<tr>
<td>Leichhardt</td>
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<td></td>
<td>THE BEST THAI</td>
<td></td>
</tr>
<tr>
<td>Leichhardt</td>
<td>17/11/09</td>
<td>26/11/09</td>
<td>mr mangranvit</td>
<td></td>
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<tr>
<td>Leichhardt</td>
<td></td>
<td></td>
<td>Infresse Furniture Design</td>
<td></td>
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<tr>
<td>Leichhardt</td>
<td></td>
<td></td>
<td>Locantro Fine Foods</td>
<td></td>
</tr>
<tr>
<td>Leichhardt</td>
<td>17/11/09</td>
<td>26/11/09</td>
<td>The Village Providore</td>
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## LEICHHARDT MUNICIPAL COUNCIL

**REPORT**

<table>
<thead>
<tr>
<th>DIVISION:</th>
<th>INFRASTRUCTURE AND SERVICE DELIVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBJECT:</td>
<td>URBAN FOREST STRATEGY REVISED SECTIONS 3 - BENEFITS OF URBAN TREES AND 10 - RISK MANAGEMENT OF TREES</td>
</tr>
<tr>
<td>AUTHOR:</td>
<td>VINCE CUSUMANO, MANAGER - PARKS &amp; STREETSCAPES</td>
</tr>
<tr>
<td>FILE REF:</td>
<td>F05/00106</td>
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<tr>
<td>DATE:</td>
<td>21 JANUARY 2010</td>
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<td>WORD PROCESSING REF:</td>
<td>F:\store\council reports\council reports\UFS sections 3 &amp; 10 revised.doc</td>
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### DIRECTOR’S SUMMARY - ORGANISATIONAL IMPLICATIONS

<table>
<thead>
<tr>
<th>Financial Implications:</th>
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<tbody>
<tr>
<td>Policy Implications:</td>
<td></td>
</tr>
<tr>
<td>Strategic Plan Objective:</td>
<td>4 A Sustainable Environment 6 Sustainable Services and Assets</td>
</tr>
<tr>
<td>Staffing Implications:</td>
<td>Nil</td>
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<tr>
<td>Notifications:</td>
<td>Nil</td>
</tr>
<tr>
<td>Other Implications:</td>
<td>Nil</td>
</tr>
</tbody>
</table>
1. **Purpose of Report**

To bring back to the Environment and Recreation Committee the revised Sections 3 and 10 of the Urban Forest Strategy and to seek adoption of these revised two sections.

2. **Recommendations**

   1. That Council adopt the next two sections of the Urban Forest Strategy, those being:
      - Section 3 – The Value of Urban Trees and
      - Section 10 – Risk Management of Trees

3. **Report**

At the Environment and Recreation Committee in October 2009, the committee resolved that:

4. *The Environment and Recreation Committee endorse the timetable for the submission of further sections for the Urban Forest Strategy as outlined in Section 4 of this report.*

Set out below is the table which was adopted at the October Environment and Recreation Committee.

<table>
<thead>
<tr>
<th>Urban Forest Strategy Section</th>
<th>Status</th>
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<tbody>
<tr>
<td>2. Urban Forest Policy Aims and Objectives</td>
<td>Adopted with UFP in July 2007</td>
</tr>
<tr>
<td>3. Value of Urban Trees</td>
<td>To be bought to Environment and Recreation Committee in December 2009</td>
</tr>
<tr>
<td>4. Existing Trees in the Leichhardt Municipality</td>
<td>To be bought to Environment and Recreation Committee in March 2010</td>
</tr>
<tr>
<td>5. Tree Preservation Order</td>
<td>Currently being reviewed by Assessments and when adopted by Council will be included in the UFS</td>
</tr>
<tr>
<td>6. Guidelines for Development</td>
<td>Currently being reviewed by Assessments and when adopted by Council will be included in the UFS</td>
</tr>
<tr>
<td>7. Guidelines for Tree Management</td>
<td>To be bought to Environment and Recreation Committee in May 2010</td>
</tr>
<tr>
<td>8. Community Consultation</td>
<td>To be bought to Environment and Recreation Committee in October 2009</td>
</tr>
<tr>
<td>9. Tree Asset Management</td>
<td>Street tree inventory completed in June 2008 Park tree inventory to be completed December 2010</td>
</tr>
<tr>
<td>10. Risk Management of Trees</td>
<td>To be bought to Environment and Recreation Committee in December 2009</td>
</tr>
</tbody>
</table>
Since the October Environment and Recreation Committee meeting the Parks & Streetscapes Section have been further refining Sections 3 – The Value of Urban Trees and Section 10 – Risk Management of Trees.

In accordance with the timetable adopted by the committee, in December 2009, these sections were presented in a report to the Environment and Recreation Committee.

At this meeting the committee resolved:

_That the report on Urban Forest Strategy Sections 3 & 10 be deferred to the February 2010 Environment & Recreation Committee meeting._

The committee sought to have the two sections of the UFS expanded to include a more quantitative based information provided in the document to assist the reader in getting a fuller understanding of the implications of trees on the environment.

Set out in this report are the revised two nominated sections. Once adopted, these will form the basis for the ongoing implementation of the Urban Forest Policy and will enable staff and the community to see how the UFP is used to further enhance and improve the tree cover in the Leichhardt municipality.

Section 3 – The Value of Urban Trees looks at the environmental, functional, cultural and aesthetic benefits that trees provide to the community as well as some of the problems which trees can cause in an urban context.

Section 10 – Risk Management of Trees will enshrine the way in which Council inspects, records, manages and maintains our trees to prevent them from causing damage and injury to property and person. This section also sets up the mechanisms by which Council can mitigate Council’s exposure to possible litigation when trees interact with infrastructure leading to disputation over the rectification of the these assets.
THE REVISED SECTIONS 3 & 10 OF THE URBAN FOREST STRATEGY

Section 3 – The Value of Urban Trees

3.0 THE VALUE OF URBAN TREES

3.1 BACKGROUND

The development of the Leichhardt Urban Forest Policy stems from the fact that no one comprehensive policy existed to guide the management of urban trees in the Leichhardt Municipality. Not since the late 1970’s, when a street tree program which saw the planting of large numbers of trees such as Eucalyptus nicholii, Eucalyptus scoparia, Lophostemon confertus, Melaleuca quinquinervia, Fraxinus Raywood, Sapium sebiferum, and Callistemon viminalis, has there been a concerted effort made to look at urban trees in the Leichhardt Municipality.

There is a distinction between trees in Council’s parks where, for the most part, they are able to grow to their natural mature height and dimensions, and street trees which grow in what can be best described as a more hostile environment where the lack of space and competition for light, air and moisture lead to less than ideal growing conditions. This coupled with underground and overhead services mean that these street trees must be pruned and restricted in their growth habits and form. Nevertheless, these street trees provide numerous benefits which are further discussed and expanded upon in section 3.2 below.

Due to a lack of adequate planning and management in the past, some of the existing trees in both streets and parks have deteriorated. Inappropriate species selection has led to management problems which now need to be carefully addressed. There is a need to develop an urban forest strategy and a set of guidelines dealing with the management and maintenance of the existing trees, together with the planting of new trees.

Urban trees make an important contribution to the Leichhardt Municipality, providing visual amenity, creating wildlife habitat and corridors and providing a pleasant environment for residents and visitors alike. With the adoption of the urban forest policy in 2007 and further development of the urban forest strategy, these documents and their implementation will provide Leichhardt with an appropriate vision, a set of management objectives and guidelines for the further improvement of the Leichhardt urban forest.

3.2 BENEFITS OF TREES

The benefits of trees in the urban environment are numerous. From hard-to-quantify expressions of enjoyment and good feelings people associate with trees, to the more concrete benefits including provision of shade and shelter, assisting with reducing
climate change, trees are an important and vital part of our cultural and natural landscape.

Trees as Assets

Landscape trees have real value and contribute to making liveable communities. Making the most of that value requires providing trees with the proper care and attention. As potentially large and long-lived organisms, trees benefit from commitment to regular care that respects the natural tree system. This system captures, transforms, and uses energy to survive, grow, and reproduce. Trees help give local residents some sort of living landscape that is not being provided otherwise.

Trees are sometimes valued as if they were inanimate sources of shade, air filtration, and social amenities. We need to remember that urban and community trees are living organisms in our care. We are responsible to them as well as to the society we serve. With improper care or neglect, trees can lose their value due to conflicts with human society with respect to form, location, and the legacy of past treatments.

Properly trained and educated landscape professionals have a great opportunity to enhance the quality of urban and community trees. This Urban Forest Strategy provides the information and procedures to allow staff and the community to better care for the urban forest in Leichhardt.

3.2.1 Environmental Benefits of Trees:

Provide shade in summer –

The shade of a tree can be up to 10 degrees cooler than in the direct sun. Research by the US Department of Agriculture found that a young, healthy tree cools the air equivalent to 20 single room air-conditioners operating for 20 hours a day.

Shade provides good protection from the sun and it can be very easy for people to use. Shade alone can reduce overall exposure to UV radiation by about 75%.

As part of creating a healthy and safe environment, local government has a key role to play in providing the community with public places, facilities, open spaces and services that provide protection from sun exposure.

Sun exposure has been identified as the cause of around 99% of non-melanoma skin cancers and 95% of melanoma in Australia. Skin cancer is therefore one of the most preventable forms of cancer. Skin cancers account for around 83% of all new cancers diagnosed each year in Australia, with at least one in every two Australians being diagnosed with skin cancer in their lifetime.
**Reduce wind speed at ground level and provide shelter in high winds as well as reducing storm damage**

Trees can reduce wind speeds by up to 50% and remove the wind tunnel effect in heavily built out streets.

**Reduce air pollution**

Trees also remove other gaseous pollutants by absorbing them with normal air components through the stomates in the leaf surface.

Some of the other major air pollutants and their primary sources are:

- **Sulphur Dioxide (SO₂)** - Coal burning for electricity/home heating is responsible for about 60 percent of the sulphur dioxide in the air. Refining and combustion of petroleum products produce 21% of the SO₂.

- **Ozone (O₃)** - is a naturally occurring oxidant, existing in the upper atmosphere. O₃ may be brought to earth by turbulence during severe storms, and small amounts are formed by lighting. Most O₃ - and another oxidant, peroxycetyl nitrate (PAN) - come from the emissions of automobiles and industries, which mix in the air and undergo photochemical reactions in sunlight. High concentrations of O₃ and PAN often build up where there are many automobiles.

- **Nitrogen oxides** - Automotive exhaust is probably the largest producer of NOₓ. Oxides of nitrogen are also formed by combustion at high temperatures in the presence of two natural components of the air; nitrogen and oxygen.

- **Particulates** are small (<10 microns) particles emitted in smoke from burning fuel, particular diesel, that enters our lungs and cause respiratory problems.

There is up to a 60% reduction in street level particulates with trees.

In an urban park of 212 ha, tree cover was found to remove daily 22kg of particulates, 4kg nitrogen dioxide, 2.7kg sulphur dioxide, 1kg carbon monoxide and 45kg of carbon.

A mature street tree along a roadway removes in one growing season 60mg cadmium, 140mg chromium, 820mg nickel, and 5200mg lead from the environment.

Planting trees and expanding parklands improves the air quality in an urban environment. A total of 300 trees can counter balance the amount of pollution one person produces in a lifetime.

**Sequester carbon by trapping carbon dioxide emissions**

Heat from Earth is trapped in the atmosphere due to high levels of carbon dioxide (CO₂) and other heat-trapping gases that prohibit it from releasing heat into space -- creating a phenomenon known as the "greenhouse effect." Trees remove (sequester) CO₂ from
the atmosphere during photosynthesis to form carbohydrates that are used in plant structure/function and return oxygen back to the atmosphere as a by-product. About half of the greenhouse effect is caused by CO₂. Trees therefore act as a carbon sink by removing the carbon and storing it as cellulose in their trunk, branches, leaves and roots while releasing oxygen back into the air.

Trees also reduce the greenhouse effect by shading our homes and office buildings. This reduces air conditioning needs up to 30%, thereby reducing the amount of fossil fuels burned to produce electricity. This combination of CO₂ removal from the atmosphere, carbon storage in wood, and the cooling effect makes trees a very efficient tool in fighting the greenhouse effect.

One tree that shades your home in the city will also save fossil fuel, cutting CO₂ build-up as much as 15 forest trees.

Planting trees remains one of the cheapest, most effective means of drawing excess CO₂ from the atmosphere.

A single mature tree can absorb carbon dioxide at a rate of 22kg./year and release enough oxygen back into the atmosphere to support 2 human beings.

Each person in Australia generates approximately 2.3 tons of CO₂ each year. A healthy tree stores about 6kg of carbon annually. An hectare of trees absorbs enough CO₂ over one year to equal the amount produced by driving a car 100,000 kilometres.

Amelioration of climate change presents opportunities for urban forests to act as carbon sinks, and thereby could possibly be included in the potential future carbon trade industry. Carbon offsets would need to be calculated on a number of factors and net carbon cost or benefit will vary according to: tree species growth rate, size, deciduous or evergreen and tree physiology (respiration rates, photosynthetic efficiency).

**Increase available oxygen levels**

Oxygen is an important gas required by all living creatures to survive. Trees are the main method by which oxygen is released into the atmosphere. The average human consumes around 260kg of oxygen per year.

The estimated annual average net oxygen production for an average sized street tree with girth of 30 centimetres would produce around 52kg of oxygen per year.

**Provide wildlife habitat and corridors**

In areas where wildlife reintroduction is being encouraged such as Leichhardt, selected tree species will help to support that wildlife with regard to habitat, shelter and food source. This function is best performed by local indigenous species. Where this is not possible, non-local indigenous species will be used. Trees provide the highways for animals such as possums and birds to safely navigate between feeding and breeding areas.
**Provide leaf litter which improves soil conditions**

The leaves and bark dropped by street trees breaks down and reintroduces valuable nutrients back into the soil. These are used by the various soil microbes which in turn help to keep the nutrient and moisture balance at a level that trees need to grow in a healthy manner thus reducing the need to use inorganic fertilisers.

This material also suppresses weeds and provides habitat for a range a small creatures such as insects and lizards.

**Stabilise surface soil and absorb surface water**

Trees reduce topsoil erosion, prevent harmful land pollutants contained in the soil from getting into our waterways, slow down water run-off, and ensure that our groundwater supplies are continually being replenished. For every 5% of tree cover added to a community, stormwater runoff is reduced by approximately 2%.

Along with breaking the fall of rainwater, tree roots remove nutrients harmful to water ecology and quality.

Trees act as natural pollution filters. Their canopies, trunks, roots, and associated soil and other natural elements of the landscape filter polluted particulate matter out of the flow toward the storm water drains and sewers.

Reducing the flow of stormwater reduces the amount of pollution that is washed into a drainage area. Trees use nutrients like nitrogen, phosphorus, and potassium—by-products of urban living, which can pollute streams.

3.2.2 Functional Benefits of Trees:

**Provide privacy between properties**

Trees act as a living screen providing a green alternative to hard constructed options such as fences or lattice. As well as the privacy that the trees provide, they can also provide the environmental benefits listed above.

**Act as a buffer zone against noise and dust**

Vegetative buffers reduce odours by physical interception of gases and dust, dilution and dispersion of odour concentrations, land deposition from reduced wind speed, biological sinks and aesthetics.
Odour sources from near the ground have a tendency to travel along the ground. Trees in a buffer zone disperse the odour and deflect it upwards leaving the downwind area less odorous.

Buffer zones are known to trap dust and reduce noise, which can also be advantageous in these situations. The buffer zones trap the dust that settles on tree, shrub and grass leaves, and slows wind speed which can lead to the deposition of larger dust particles.

It is thought that visual screening that is provided by vegetative buffer zones can play a role in suppressing off-site effects as they are ‘out of site, out of mind’.

**Reduce glare from hard urban surfaces**

Broad canopied trees can greatly reduce glare and heat in from hard urban surfaces such as driveways, paved courtyards and roofs where there are large expanses of reflective materials. The shading provided by trees minimise heat reflection and glare and reduce water wastage through run-off. Trees adjacent to patios and pools can also reduce heat and glare.

**Give separation of areas such as roads and public spaces**

Trees can also enhance traffic calming measures, such as narrower streets, extended kerbs, roundabouts, etc. Tall trees give the perception of making a street feel narrower, slowing people down. Closely spaced trees give the perception of speed (they go by very quickly) slowing people down.

A treeless street enhances the perception of a street being wide and free of hazard, thereby increasing speeds. Increased speed leads to more accidents. Trees can serve as a buffer between moving vehicles and pedestrians.

Street trees also forewarn drivers of upcoming curves. If the driver sees tree trunks curving ahead before seeing the road curve, they will slow down and be more cautious when approaching curves.

**Help establish a local character**

The selection of the appropriate tree species can reinforce historical, cultural or natural associations from the past, particularly the early settlement era landscape planting and trees with traditional significance to the local Aboriginal and subsequent European communities.

Many streets in the Leichhardt area, due to their mature street trees are known to the wider community and in certain seasons when they are flowering or in Autumn colour attract visitors to these streets.
**Increase the value of residential and commercial properties**

Property values can increase 5-15% when compared to properties without trees (depends on species, maturity, quantity and location).

Studies have found that mature street trees can increase the sale price of homes in that street by around 20%.

3.2.3 Cultural Aesthetic and Sociological Benefits of Trees

**Trees are visually stimulating and give a sense of serenity**

Research based upon the amount of contact people had with trees came to the following conclusions:

Trees have the potential to reduce social service budgets, decrease police calls for domestic violence, strengthen urban communities, and decrease the incidence of child abuse.

Residents who live near trees have significantly better relations with and stronger ties to their neighbours.

Researchers found fewer reports of physical violence in homes that had trees outside the buildings.

Studies have shown that hospital patients with a view of trees out their windows recover much faster and with fewer complications than similar patients without such views. Trees help create relaxation and well being.

**Enhance historically and culturally significant areas**

Many great urban spaces, parks and streets are identified by the trees which are growing there. For example the large figs and Canary Island Date Palms in parks such as Elkington Park and Gladstone Park provide cultural and historical markers that allow us to date the establishment of these spaces as important public recreational areas.

In the same way, the bushland revegetation being undertaken today not only reflects the flora that once existed in the Leichhardt area but will allow future generations to date and observe when the community identified and carried out the plantings which helped to re-establish these important areas.
Provide human scale to the built environment

The most commonly recognised benefit of street trees, however, relates to their visual and aesthetic role in making our streets and cities more welcoming and pleasant places. Trees enhance a sense of identity, legibility and spatial definition in a street and provide sense of human scale in urban streets. A well designed avenue of trees can provide a unifying element in a visually diverse streetscape.

Highlight seasonal changes

Trees, through their growth habits and life cycles provide makers of the seasons. Through flower displays of the wattles in late winter to the jacarandas with their mauve blossoms in late spring their variety and beauty enrich the urban environment.

Large deciduous trees when they put on their autumn colour and then drop their leaves allow the sun to come through and warm the street in winter.

3.2.4 Problems caused by Urban Trees

There are however, a number of problems caused by urban trees which, while not outweighing the benefits of trees in urban environments, must be carefully considered before a planting program is undertaken.

Outlined below are a list of the common problems caused by trees and the consequences of this damage.

Lift driveways, footpaths, kerbs and walls

Due to the fact that Leichhardt has shallow soils and narrow streets, coupled with the fact that over the years, inappropriate tree species have been planted in streets and parks has meant that the roots of these trees have, through their adventitious nature in seeking optimum growing conditions, intruded under structures. Over time the growth of these roots has led to the deflection of these structures which in turn leads to Council or the residents having to take actions to repair these structures and/or remove or prune the offending roots, or in the worse case scenario the entire tree.

Each year Council has to carry out a significant number of infrastructure repairs and replacements to rectify damage caused by tree roots lifting built structures. In the most extreme cases and where no other option is available, trees are removed. In the case of significant trees Council takes every step to retain them. This has included the expansion of the tree hole, the installation of root barriers and the construction of timber boardwalks over offending roots.

In the year 2008/2009 claims from residents for damage caused by Council street trees to their property totalled $17,000.
**House borers, white ants and other pests**

Trees are used by a number of insects and other creatures as habitat and in a balanced eco-system their numbers are, for the most part, kept in check through natural systems. However, in an urban environment, a number of these creatures migrate from trees into the surrounding area where they get into dwellings and other built structures causing problems to the owners.

In a number of instances, the trees themselves are not the source of the problem however the public, through misinformation form the opinion that the tree is the reason for the infestation and/or damage. This is especially the case with white ants. These invasive creatures form colonies, usually in the ground and use this as the base from where they forage for wood and other cellulose based materials to feed themselves and the colony. Trees in the vicinity of these colonies, like the dwellings that they infest are preyed upon by the white ants. As they are in the tree, the connection is made that the tree must be the cause of the problem. In the great majority of cases this is in fact not the case.

Some insects however do infest trees at certain times of the year do cause problems to humans in an urban environment. These range from caterpillars with defensive hairs or spines which can irritate the skin when touched or fall from trees onto passers by to wasps and bees which use tree hollows as hives or nests and then defend these when persons venture too close to the tree.

In the majority of cases however, most of these creatures can be dealt with in a manner which enables the tree to be retained.

**Drop limbs**

There is no single cause. Limb shear occurs because of a combination of different factors. These include environmental conditions, the age of the tree and species variation. The variation may be within species as well as between different species. You can see a whole paddock of River Red Gums and 48 out of the 50 will be fine and two of them will have fallen limbs all round them. Certainly some species of trees are particularly prone to limb shear.

However the majority of cases are caused by some defect in the union between the limb and the trunk, or some section of the limb adjacent to the trunk. Very often we can see evidence of decay. This may have been caused by something as simple as a cockatoo or possum eating away at the bark, allowing decay to set in. Or perhaps the tree has been subject to environmental limitations, such as drought or compaction, and its ability to repel decay may have been reduced. Sometimes the reasons may go back 10 or 15 years. For example, people forget that 10 years ago, a new water main was put in and half the tree’s roots were severed.

Trees are amazing survivors but such things take their toll. Limb shear may be the consequence of actions from years ago.
Having said all that there are still occasions when arborists can find no explanation at all for why limbs fail.

Some species are however more vulnerable to limb shear. Some of these are: River Red Gum (Eucalyptus camaldulensis), Narrow-leafed Peppermint (E. nicholii), Sugar Gum (E. cladocalyx), Lemon-scented Gum (Corymbia citriodora), Spotted Gum (Corymbia maculata) and Swamp Mahogany (Eucalyptus botryoides) are some of the trees to be watched in particular. Most species of Elm are also prone to limb shear. Ulmus procera and U. x hollandica seem equally likely to do it.

The problem with Swamp Mahogany, a tree endemic to the Leichhardt area, in the urban situation may go right back to the original genetic stock used for propagation, or the lack of care taken in the nursery to remove problem branches. The problem seems to stem from the morphology of the tree. Because of a condition called "included bark", the branches are typically not very well attached to the tree.

It is important to understand that the eucalypts in the urban situation are quite different to the eucalypts in the forest. Eucalypts in the forest tend to grow straight up as they compete with each other for light. In the urban situation, the trees have more light and consequently, a more extensive canopy and branch structure.

There is research, currently being undertaken to test the hypothesis that shading of lower branches, or over pruning of branches, may have an influence on their tendency to drop.

It is important to realise that it is difficult to predict when a limb will fall. However there are steps that can be taken that will minimise the risk. As trees age, the likelihood of limb shear increases. Old or vulnerable trees should be examined regularly by a professional arborist who needs to climb the tree and examine the limbs closely. By undertaking formative pruning and the removal of the lower limbs as the tree matures, the incidence of limb shear is significantly reduced.

In the case of mature trees, some limbs may need to be removed, or it may be that the whole tree needs removing. This is especially the case with some trees in the Leichhardt area such as short lived Eucalypts like E. nicholii which have caused a number of claims by dropping large limbs on cars and houses. Where a limb is aesthetically important, cabling and bracing can be employed, so that if the limb does fail, it will be less likely cause an injury.

**Drop leaves which can block gutters and drains**

All trees will, at some stage of their growth cycle, drop leaves. In the case of deciduous trees, this occurs during autumn when the tree drops all of its leaves and goes dormant, re-shooting a new set of leaves in the spring.
In the case of evergreen trees such as Eucalypts, Brush Box and Bottlebrush, these trees drop leaves right throughout the year.

These leaves, when in large numbers can and do block guttering and drains which can then lead to, if not regularly removed, subsequent damage through flooding and backing up of gutters which then overflow onto houses and other structures.

In the vast majority of cases, by regular cleaning of gutters and drains, these problems can be minimised. There re also a number of gutter guards which can be fitted to urban guttering which resist the build-up of leaves and so prevent damage to the property.

**Damage underground drainage and sewer pipes**

Tree roots, by their very nature seek out moisture and nutrients needed by the tree to grow and survive. Up until 30 years ago, the drains and sewers in our urban environment were constructed using a variety of earthenware and fibrous cement pipes which were joined using a rubber ring and held together by the soil and aggregate placed around them.

These pipes, due to movement in the soil, poor compaction of the trenches when the pipes were installed or by the deflection of roots growing alongside them, open up at the joint and allow their contents to leak into the surrounding soil. Once this occurs, roots will detect this moisture and enter the pipe. As the root grows it will expand, further blocking and breaking the pipe. This leads to sewer back-ups and drains that won’t work and which then need to be excavated and repaired.

With the advent of plastic PVC pipes with glued joints, there is no leakage into the surrounding soil and as such roots are not attracted to them, do not invade them and cause damage to the pipes.

Council encourages and in a number of cases, specifies that when pipes need to be dug up due to root blockage, that the pipes be replaced in PVC. This trend will mean fewer claims for damage in the future.

**May be pruned unsystematically into unattractive forms**

The beauty and aesthetics of a tree are maximised if the tree is able to grow into its natural shape and form. Unfortunately, in an urban environment with the interaction of trees with houses, and overhead electrical services, the tree needs to be pruned to provide adequate clearances.

In works undertaken by Council to provide property clearance, the works are carried out so as the tree’s shape is substantially retained. However in the case of overhead electrical line clearance, the works undertaken to achieve the required clearances leaves the trees with a less than sympathetic shape.
In the case of normal street power lines the authorities are required to provide a 2 metre clearance from the branches to the wires. In the case of high voltage feeder lines this clearance can be as much as 4-5 metres.

Council has, in the case of streets with large established trees, opted to accept the added charge to have aerial bundled cable installed (ABC). This shielded cable is able to, due to its insulation, exist closer to the branches and as such the tree does not require the same heavy pruning that open or uninsulated conductors require. Set out below is a table which shows the costs that Energy Australia charge for the installation of ABC and undergrounding of electrical lines.

<table>
<thead>
<tr>
<th>Options</th>
<th>Indicative costs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimming if overhead is retained.</td>
<td>$15 - $150 per span per year.</td>
<td>Most economic community outcome provided environmental issues are suitably managed.</td>
</tr>
<tr>
<td>Replacing bare overhead wires with Aerial Bundled Cables (ABC).</td>
<td>$4,000 - $7,000 per span + ongoing trimming costs.</td>
<td>EnergyAustralia provides a heavily subsidised program with Councils contributing 50% of actual costs. Trimming to reduced clearances will still be required.</td>
</tr>
<tr>
<td>Replacing overhead wiring with underground cables</td>
<td>$56,000 - $104,000 per span. (Typically 8 customers per span at $7,000 - $13,000 per customer).</td>
<td>EnergyAustralia considers all requests for undergrounding on a case by case basis in accordance with the “Network Undergrounding Policy Guidelines.”</td>
</tr>
<tr>
<td>Relocating powerlines to avoid vegetation or vegetation removal.</td>
<td>Need to be costed on a case by case basis. Could be done on a ‘beneficiary pays” basis.</td>
<td>Each job is unique. Costs need to be assessed on a range of issues - technical, social and environmental.</td>
</tr>
</tbody>
</table>

Council will continue to work with the electricity authorities to ensure that their works have as least an impact on the trees as possible.

**Block street lights which darken streets at night**

Councils and energy authorities are required to provide street lighting which meets the relevant Australian Standard for Public Lighting AS 1158. The level of illumination is governed by the class of road. For sub-arterial roads and collector roads the level of illumination required is higher than for local streets and cul-de-sacs. Nevertheless, Council and the energy authorities are responsible for maintaining this lighting.

The canopies of urban trees on streets spread out over footpaths and roads as a consequence block the illumination provided by street lighting. This then requires the trees to be pruned or alternative locations found to mount the lights away from the trees.

Council has been liaising with Energy Australia who have introduced a new fitting which has a longer arm which can reach out further than the tree canopy onto the roadway and therefore reduces the amount of pruning that the tree requires. Council will continue...
to work with Energy Australia to introduce this type of fitting throughout the Leichhardt area.

**Restrict visual distance from driveways and intersections**

Trees planted (or allowed to grow) too closely to a road or those which are not adequately under-pruned create several potential hazards. The most obvious is the fixed-object hazard created when an errant vehicle runs off the road and strikes a tree. The other hazards caused by trees include visual obstruction of signs and other roadway users, sight distance obstructions (at intersections, driveways, and curves), and an overhead hazard to large trucks.

To rectify these situations, Council is required to prune trees so that the sight distances are improved. Special attention also needs to be taken when siting new street trees and garden beds and on the species selection.

Preference should be given to species with a clear single trunk with little or no foliage between the ground and 1.8 metres high when mature. This will not only improve the safety of vehicles but will also allow pedestrians to observe on-coming traffic when crossing roads.

**Relate to cultural superstitions**

Many cultures view trees and the location in which they are planted as having a detrimental effect on their lives and well being. In Feng Shui for example, the locating of a tree which is in line with the front and back door of the dwelling can have a detrimental effect on the health and prosperity of the persons who live there.

There are many other cultures where trees are seen as harbouring spirits and as such should not be located near the house.

While Council needs to be mindful of person’s cultural beliefs, consultation with residents when street tree planting is planned may enable the location of the tree to be carried out which will not impinge on the cultural beliefs of these persons.

**3.3 REQUIREMENTS OF URBAN TREES**

The basic requirements for healthy growth of trees are as follows:

- **air** - above ground and in soil pore spaces
- **water** - quality and quantity
- **nutrients** - quality and quantity
- **light** - quality and quantity
- **space** - above and below ground
- **establishment maintenance** - correct planting and care
Trees in urban environments are constantly subjected to stresses. Lack of basic requirements, urban problems including wind, pollution and compaction, along with inadequate maintenance all contribute to the fact that urban trees rarely reach their full potential size or life span.

It is possible however, to overcome these adverse conditions if conditions of drainage, soil and water are good. The soils found in the Leichhardt area are generally poor, and some problems associated with these soils are detailed below:

- The soils in the Leichhardt Municipality have been largely modified over many years by the actions of wind, water, physical removal during rural and urban development and the importation of materials.

- In nearly all areas industrial and residential subdivision saw almost all of the topsoil stripped and fill material bought in to provide a more solid base on which to build foundations and to level areas for development. This has meant that the little topsoil cover that did exist has now been lost and planting in these areas is being carried out, for the most part in this fill material.

- The naturally occurring soils in the area are podzolics, based on Hawkesbury Sandstone. The ridges and high ground surrounding the creeks in the Leichhardt area consist of the Wianamatta Shale geological formation. The landscapes range from is gently undulating slopes, usually less than 5%. Soils are shallow to moderately deep with a clayey subsoil Red, Yellow and Brown Podzolics. There are however areas in the Municipality that are steeper, formed on the Hawkesbury Sandstone geological formation. Rock outcrops are common, soils sandy and shallow - Yellow Earths and Earthy Sands.

- The tree cover which occurred naturally before development had adapted to survive in these conditions. However, many introduced tree species struggle to put down deep root systems, often adopting shallow feeder roots which cause a range of problems including damage to structures in their vicinity. Figure 1 illustrates the structure of a typical tree root.

- For this reason extra care must be taken when planting trees within Leichhardt Municipality. Attention must be given to providing a well ripped and shattered planting hole which will encourage roots to grow down and away from the surface.

- Watering and formative pruning is also important in the early stages of growth to prevent the young roots from foraging for moisture close to the surface and shoots from causing future problems.

- Species selection is perhaps the most important factor to be considered. Trees which do well on clay soils for example will struggle to survive when planted in the soils of Inner Western Sydney.
Prior to the planting of any trees, Council must carefully consider the following factors:

- suitability of a tree species for a particular location
- amount of room for root and canopy growth
- sufficient soil around the tree to permit water and air exchange to occur
- future maintenance requirements
- possible damages to utilities
- width of planting verges so as not to restrict able and/or disabled access

Section 10 – Risk Management of Trees

10.0 INTRODUCTION

The following section has been taken from the Statewide Mutual guide to risk management of trees. The information contained in this section will be used as part of the urban forest strategy to determine possible risks and management procedures for dealing with these.

Many of the concepts contained in this section have been introduced and were being used before the formulation of the UFP.

10.1 THE PERCEPTION OF RISK

Many people in the community have a fear of large trees and a perception exists that large trees pose a risk to their person or property if they were to fall or drop large limbs. When we consider the number of trees in the urban environment and actual number that fall and cause damage and injury, the percentage is quite low, however it may not be perceived in this way by the public, particularly following an incident which gets widely reported in the media.

Our perceptions shape our decisions about risky activities and situations, from crossing a street to making a financial investment. Unfortunately for technical analysts, however, both our perceptions and our decisions related to risk are complex. They even appear irrational: someone may pass up one risk as unacceptably high, but then and accept another, technically higher, risk without hesitation.

In almost all cases where trees fall or drop limbs, can be traced back to a number of contributing factors such as internal decay, decline in the health of the tree caused by insects or other pests, age of the tree, removal of roots through building activities or a combination of these factors which is exacerbated by severe weather conditions. It is very rare that a healthy tree with no structural faults drops limbs or falls over.

Council, through the use of the UFP and this strategy will put in place quantitative as well as qualitative tools which will be used to determine the potential risk of trees under our control.
These will include assessment procedures for trees, the planting of appropriate species and the removal and replacement of trees which have been assessed as having a higher potential for failure in adverse weather conditions.

10.2 LEGAL ISSUES

This section acknowledges the contribution of trees to urban living and to the interaction between trees and infrastructure. There are potential risks arising from these interactions. This section identifies management strategies necessary to minimise these risks.

Adoption and implementation of these guidelines provides evidence that Council has taken reasonable steps to minimise the risk of injury or damage when trees and infrastructure interact.

10.3 LIABILITY AND RESPONSIBILITY

There are a number of situations in which Council may be liable for damage and/or loss involving trees. The most common situations are:

- Where roots contribute to property damage or where they create hazards to third parties (eg trip points on footpaths), and
- Where branches or trees fall onto property owned by third parties and cause property damage and/or injure a third party.

Because of the large number of claims involving trees the following brief summary of the law in this area together with a summary of your liability in the scenarios canvassed is provided.

Council may be liable for trees and tree roots due to two different legal rights accruing to third parties. These two rights are a right in nuisance and a right in negligence.

Each of these rights can operate in quite different situations and scenarios. As the degree of liability can differ, depending on which right accrues to a third party, it is necessary to look at each right/concept and examine how it affects Council.
10.4 NUISANCE

An entitlement or an action in nuisance is simply a right that accrues to a third party when that third party’s interest, use, and/or enjoyment of their land is affected by the actions of another party/owner of land. The interference with the third party’s interest in their land is the key to an action in nuisance against Council.

The typical situation involving a right in nuisance against Council relates to situations where tree roots from a Council tree located on their property grow and interact with the property/service conduits of a third party. A typical example is the case of tree roots from a Council tree interacting with sewer pipes owned by a ratepayer.

The liability upon a Member for tree root damage was considered by the NSW Court of Appeal in Owners of Strata Plan 13218 v Woollahra Municipal Council.

In Owners of Strata Plan 13218 v Woollahra Municipal Council the Claimant’s sued the Council for damage sustained to a retaining wall on their premises by the roots of a tree growing on the Council road reserve. The tree had not been planted by Council and was self sown.

Council succeeded at trial by relying upon the nonfeasance immunity. However, following the trial and prior to the hearing of the Claimant’s appeal, the High Court delivered judgment in Ghantous v Hawkesbury City Council which abolished the nonfeasance immunity. This was the first decision dealing with a Council’s liability for tree root nuisance since the abolition of that immunity.

The Court of Appeal gave two separate and distinct judgments in dealing with the Council’s liability for tree roots is which shows how uncertain the issue can be.

Justice Powell found the Council was liable in nuisance only after Council had actual knowledge of the cause of the damage and where Council clearly had the means and resources available to it to do something about abating the nuisance but elected not to do so. This did not actually occur until investigations were undertaken in preparation for the hearing of the claim and the area excavated revealing the tree roots alongside the retaining wall. His Honour found the Council had actual knowledge of the cause and damage and that time and failed to do anything about it.

Justice Rolfe found Council was negligent (not liable for a nuisance) once it became aware or should have become aware of the damage to the area and failed to do anything about it. His Honour believed this to have occurred once cracking appeared on the footpath which occurred many years prior to any damage to the wall becoming obvious.
Powell’s judgment is the most favourable for Councils and is very similar to the nonfeasance immunity reintroduced by section 45 the Civil Liability Act 2002. The effect of the decision and the statutory immunity is a Member may be liable for a nuisance where it has actual knowledge of the damage being sustained by the tree roots and decides to do nothing about it even though it may have the resources to do so.

When determining what constitutes “actual knowledge”, we expect the Court will take into account matters such as prior complaints to the Council, a history of damage to the surrounding area from the same source and, importantly, whether Council planted the tree or not.

_in summary, a Member may be found liable in nuisance for tree root damage in circumstances where it has actual knowledge of the cause of the damage and the damage being sustained but fails to take any reasonable steps within its budget to abate the nuisance._

10.5 NEGLIGENCE

In situations where trees do not interfere with a third party’s enjoyment of their land, but where a tree is implicated in property damage and/or personal injury, an action in negligence can lie against Council.

For a claimant to succeed in a damages claim in negligence against Council for fallen tree branches and the like, the claimant has to establish three essential elements, on the balance of probabilities. These elements are:

- a duty of care was owed by Council to the claimant;
- Council breached the duty of care owed to the claimant;
- the damages sustained, and/or the loss suffered, was caused by Council's breach of duty of care.

In relation to the application of these principles in the present context, Councils have a duty to ensure their trees are maintained so as to minimise the chances of branches falling and the like, and so cause property damage or personal injury.

However, Councils only have a duty to take reasonable steps to minimise the risk of damage caused by falling branches and the like. Accordingly, if Councils maintain and inspect their trees on a regular basis, and the trees conform to other statutory and regulatory requirements, we believe it will be difficult for a claimant to establish on the balance of probabilities, that Council has breached its duty of care.
We emphasise that just because a tree branch falls or a tree falls over and someone sustains property damage or personal injury, this, of itself, is not conclusive evidence of negligence on the part of Council. The claimant must establish, on the balance of probabilities, that Council did not take reasonable steps to protect them from property damage or personal injury.

In order for you to be able to defend a claim arising from a fallen branch or tree etc., you are required to take reasonable steps to ensure your trees are properly maintained and managed. It is absolutely vital this process be documented so this evidence can be relied upon if necessary in the event of litigation.

It is difficult for Council to say it relied on a system where there is no corroborative evidence of the system being adhered to. It is also important to document all issues and other factors that may be relevant to the reported problem. For example you might record prevailing weather conditions.

On the other hand, if you do not have an appropriate maintenance program, and/or fail to comply with statutory requirements, it will be very difficult for you to defend a claim arising from a tree failure.

What precise maintenance steps should be taken depends upon the type of tree concerned and the area where the trees are located. Naturally with trees under which people walk and under which valuable property is often located, the more diligent you will have to be.

On the other hand, with trees throughout reserves within Council, the duty on Council is not as onerous. In this respect, you should be guided by tree experts as to what reasonable steps need to be taken so as to protect property and persons from reasonable foreseeable danger.

By way of summary, Council can be liable for damage to third party property and personal injury caused by mature self-sown and Council sown trees.

10.6 TREE PRESERVATION ORDERS

Care must also be taken by Council when implementing and enforcing a tree preservation policy. Most tree preservation policies prevent or restrict the pruning, lopping, topping, removal or destruction of certain trees within the Municipality. However, in circumstances where it can be demonstrated to Council a tree is dying, dead, or dangerous to persons or property, the policy should provide for the appropriate action to be taken (such as the removal of the tree in whole or part).
Council is entitled to refuse any applications made to prune, lop, top, removal or destroy trees in accordance with the tree preservation order. However, where evidence is presented to Council to support the application and that evidence shows the tree to be dying, dead or dangerous, or where a properly conducted inspection by a Council officer reveals there to be a problem with the tree, Council will be found liable should it refuse the application and damage occur to the applicant following the refusal.

Where Council does refuse an application under its tree preservation order, it is advisable the Member also advise the applicant if the grounds upon which an application would be granted (i.e. if it can be established the tree is dying, dead or dangerous). Should any damage occur following that refusal, the Council is able to argue it did take reasonable steps and afford the applicant an opportunity to renew the application for consideration with additional evidence.

**In summary, if Council refuses an application under its tree preservation order, it must be satisfied on the information accompanying the application and any inspections undertaken by the Member that the tree is not dead, dying or dangerous.**

### 10.7 THIRD PARTIES TRIPPING OVER TREE ROOTS

In relation to the road reserve, where road reserve includes the footpath, since the abolition of the doctrine of non-feasance a Council can now be held liable for personal injury or property damage for failing to maintain and/or repair the road reserve. That is to say that if Council's failure to repair the roadway or footpath was the cause of the claimant's property damage or personal injury, the non-feasance highway immunity no longer affords Council a complete defence to a claim. The High Court decisions in *Brodie v Singleton Shire Council* and *Ghantous v Hawkesbury City Council* removed non-feasance and held road authorities actions would be judged in accordance with the general concepts of negligence.

The highway non-feasance immunity only ever applied to highways, roadways and structures appurtenant thereto, like footpaths. The immunity never extended to artificial structures, for example, a defective brick drain constructed in the road, a dangerous sewer grid, an open space around a tree planted on a footpath; a swing bridge, seats, lamp posts and pillar boxes have all been included in the definition of "artificial structures" and so were excluded from the immunity. This means the ordinary principles of negligence, i.e. the above analysis of duty of care, breach of duty of care and the need for the damage/loss having been caused by the breach of duty of care, is applicable to maintenance and repair of the road reserve including artificial structures apply in cases involving property damage or personal injury caused by artificial structures.
What the Court will now focus on is whether a reasonably foreseeable risk arising from a tree ought to have been detected and rectified by Council. Council’s conduct will be measured by assessing the magnitude of the risk against the expense, time and cost to Council of detecting and rectifying the risk.

If Council does not take reasonable steps to minimise the risk of tree root damage to footpaths from Council sown trees, or other trees it is aware of, Council can be held liable for any property damage and/or personal injury that occurs to users of the footpath.

There is now a positive duty on Council to be pro-active and have a programme so that footpaths are inspected and adequately maintained and/or users are warned of any unusual dangers. This is because the ordinary principles of negligence applies in the case of third parties suffering property damage and/or sustaining injury as a result of tree roots from Council sown trees.

Following the High Court’s decision in Ghantous, there have been a number of decisions from the Courts which reinforce the need for pedestrians to take care by looking where they are going and avoiding obvious hazards. The Courts have recognised pedestrians are in a better position to see where they are going and see and avoid obvious hazards, particularly when they are inherent in the surrounds and that pedestrians are required to take reasonable care for their own safety. For example, in Parramatta City Council v Watkins (NSW Court of Appeal 12 October 2001 — unreported) Hodgson JA stated:

“sudden variations in level of this magnitude may generally be expected at the edge of footpaths, at transitions between different paths or surfaces, and even between footpath slabs in the vicinity of trees; and also between paved and unpaved areas of road. However, the same may not be true within the paved surface of an apparently well-maintained road, particularly where the change of level is not obvious; and the circumstance that the change in level in this case was in a designated parking area, where it could be partially obscured by a parked car, would add to the risk.”

Whether a particular hazard can be considered obvious will depend on the circumstances of each claim. However, merely because the Court will look at the behaviour of the Claimant does not abrogate Council’s responsibility to take reasonable steps to detect and repair problems caused to its footpath assets.

Section 45 of the Civil Liability Act 2002 which has reintroduced the nonfeasance immunity for Members in NSW provides:
1. A roads authority is not liable in proceedings to which this Part applies for harm arising from a failure of the authority to carry out road work, or to consider carrying out road work, unless at the time of the alleged failure the authority had actual knowledge of the particular risk the materialisation of which resulted in the harm.

2. This section does not operate:
   a. to create a duty of care in respect of a risk merely because a roads authority has actual knowledge of the risk, or
   b. to affect any standard of care that would otherwise be applicable in respect of a risk.

3. In this section:
   a. "carry out road work" means carry out any activity in connection with the construction, erection, installation, maintenance, inspection, repair, removal or replacement of a road work within the meaning of the Roads Act 1993.
   b. "roads authority" has the same meaning as in the Roads Act 1993.

The section provides Council may be entitled to rely upon the nonfeasance immunity in circumstances where it does not have actual knowledge of the risk. However, subsection (2)(b) makes it apparent Council is not entitled to “ignore” potential risks so as to avoid acquiring knowledge of a particular risk.

In summary, Council is required to implement reasonable systems to minimise the risk of tree root damage to footpaths. Council can be held liable for damage where there is evidence the Council was aware, or should have been aware through the proper implementation of any systems in place, of a particular risk.

10.8 UNDERSTANDING THE LIVING TREE

10.8.1 GENERAL

A tree is a dynamic living organism as well as a potentially large structure. Every species is genetically determined to achieve certain proportions within the limits imposed by its environment. A tree gets bigger as it grows and so its mature size has to be accounted for when planning new planting or when designing new structures near existing trees.

In order to grow a tree must take carbon dioxide from the air, and water, nutrients and oxygen from the soil. It must have enough light, the right temperature range, and enough depth and volume of soil in which to support itself.
The leaves of trees produce sugars and oxygen by the process of photosynthesis. These sugars are the source of energy for all living cells within the tree and as such are essential for its normal functioning and survival.

Branches and trunks are composed of many tissues with specialised functions. These tissues include bark for protection, transport systems for water, nutrients and sugars, wood for strength and support and areas for storage.

The main functions of roots are the uptake of water and nutrients, support (anchorage) and sugar (energy) storage.

In order for trees to provide the benefits that we expect from them the needs of the tree must be met. Most limiting is the need for oxygen and water from the soil, and this is where most of the interactions and potential conflicts arise between trees and structures.

Trees are complex biomechanical structures that adapt and change mechanically as a result of interactions with their environment. For example, a tree will add extra wood in places where it needs extra support, such as when it is growing towards a light source. The concept of adaptive growth, also known as the Axiom of Uniform Stress is discussed in Mattheck (1999).

**10.8.2 HOW ROOTS GROW**

Whilst trees do not ‘think’ - they do react. Despite popular opinion, roots do not have intentions and so they cannot ‘seek’ out resources as is commonly believed. Roots are opportunistic but they do not act ‘aggressively’. Root growth occurs at the very end of the root tip and it can only occur when there is sufficient soil oxygen and moisture.

Roots will not grow if there is too much water, not enough oxygen, or if the spaces in the soil are too small. Knowledge of root growth characteristics can be used in the design of infrastructure in proximity to trees. Equally important is the provision of sufficient space for the growth of healthy trees.

Tree roots are also storage organs and so they do have the potential to generate new roots after being cut. In most cases, a tree will generate new roots when roots are cut cleanly, but if roots are torn then they are most likely to decay and die leading to a potential loss of tree stability.
10.8.3 A SUMMARY OF CONTEMPORARY KNOWLEDGE ON ROOTS

One of the most influential studies is that by Perry (1982) who proposed the following revised view on tree root systems:

- The diameter of tree root spread is commonly (but not universally) 2-3 times the height of the tree, or 3-7 times the diameter of the canopy, and are well beyond the periphery of the canopy (*drip line*),
- The bulk of root growth is predominantly lateral in soils, parallel with the surface,
- On medium textured soils the bulk of the root system is found in the top 1.0 metre of soil with most of this in the top 300mm. Deeper roots represent only a small fraction of the total root mass,
- Root systems consist of three main parts – the primary or first order woody roots (for support and storage), the secondary or second order woody roots (for transport) and non-woody roots (for water and nutrient absorption). It is these non-woody roots that are the most extensive,
- Tap roots do not persist in transplanted trees and are less common than generally imagined in trees that have established *in situ*. The most important roots are the lateral roots described above,
- The trees environment (and the soil environment) is probably more important than genotype (the genetic constitution of an individual) in determining tree rooting patterns and depth of rooting,
- Tree roots do not grow towards anything in particular, but are opportunistic, concentrating wherever conditions are favourable. (favourable conditions can be defined as soil penetrative resistance of less than 0.2 - 0.3 Mpa; soil oxygen levels greater than 13.0% of soil pore atmosphere, and adequate soil moisture),
- The ratio of root mass to aerial parts of the tree is determined by a combination of genotype and site conditions (in particular seasonal moisture stress) and varies from 0.15:1 to greater than 1:1,
- The actual behaviour and architecture of the root systems of most species can only be determined by excavation; this is not practical. However the data generated by several scientific studies plus observations, supports the model proposed by Perry, and
- There are very few scientific reviews of the distribution of the root systems of Australian trees to confirm anecdotal views long held that Australian native trees are inherently deep rooted.
10.9 INTERACTIONS BETWEEN TREES AND STRUCTURES

Typical interactions leading to conflict involve trees and powerlines (eg causing fires and loss of power) trees and poles, trees and footpaths (eg tripping points), trees and pipes, repair of footpaths and trees, installation of underground services near trees. Table 2 lists some of the more common interactions.
### TABLE 2 COMMON INTERACTIONS & IMPACTS BETWEEN TREES & STRUCTURES

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>Typical Causes of conflict with trees</th>
<th>Impact by trees</th>
<th>Impact on trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footpaths</td>
<td>Pathways located too close to trees, bitumen laid over tree roots.</td>
<td>Lifting, heaving, cracking, leading to trip hazards &amp; increased risk</td>
<td>Root pruning and root scalping leads to root decay &amp; a potential loss of stability; reduced water and nutrient uptake; reduction of soil oxygen; loss of natural nutrient recycling; and elevated tree stress.</td>
</tr>
<tr>
<td>Kerb and Gutter Concrete / Stone</td>
<td>Pathway cross overs located too close to trees.</td>
<td>Lifting, heaving, cracking &amp; displacement. Drainage interruptions</td>
<td>Restricted root distribution effects tree stability and the critical availability of water and elements</td>
</tr>
<tr>
<td>Underground services</td>
<td>Improperly laid eg poorly jointed, inadequately compacted backfill; inappropriate backfill materials, pipes retained past their useful life and requiring renewal, use of technology that does not account for the dynamics tree root development</td>
<td>Blockages, crushing, displacement &amp; heaving</td>
<td>Root loss during installation; incipient decay following excavation. Changes in water table fluctuations; gas leaks; soil saturation.</td>
</tr>
<tr>
<td>Overhead Services</td>
<td>Inappropriately located poles, poles shorter than prescribed heights, wires lower than prescribed height, uninsulated wires where insulated cables would be less restrictive on tree planting and safer near people, above ground transformers</td>
<td>Branch &amp; whole tree failures; wind whipping. Electrical outages, blackouts, fire, restricted access to poles</td>
<td>Reduced amenity and environmental contributions ie shade and shelter, aesthetics, PM 10 absorption; incipient decay. Poor public image for street trees</td>
</tr>
<tr>
<td>Buildings &amp; other load bearing structures</td>
<td>Minimum distances not observed, reactive soils.</td>
<td>Lifting and cracking of foundations; subsidence; branch &amp; fruit shedding; reactive soils drying and wetting cycles</td>
<td>Damage during site preparations and construction, reduced sunlight, wind tunnelling,</td>
</tr>
<tr>
<td>Traffic &amp; pedestrians</td>
<td>Compaction.</td>
<td>Vehicle hitting trees Blocked vision of road signs and access places Trip points in footpaths</td>
<td>Trees damaged or killed in vehicle accidents; Heavy and repeated pruning to achieve visibility; Decay of roots and loss of stability from root grinding for footpaths.</td>
</tr>
</tbody>
</table>
Interactions between trees and structures are complex and there are likely to be other factors contributing to any given situation. It is therefore not beneficial to focus concern entirely onto a tree or tree species when developing a tree risk management strategy.

Factors that commonly contribute to negative interactions between trees and structures include:

- The soil type; its structure and depth;
- The tree species and its genetic disposition;
- The design of the structure;
- The construction materials and methods adopted;
- The age of the structure (as with trees, structures have a ‘useful life span’ and have to be maintained and then replaced within in set timeframe); and
- The type of previous land use eg industrial sites where soil contamination and/or layers of fill can impede normal biological processes.

10.10 RISK MANAGEMENT STRATEGIES – EXISTING TREES

10.10.1 BASIC RISK MANAGEMENT

**Definition of Hazard**

Anything with potential to harm health, life or property

**Definition of Risk**

The probability that a hazard will cause injury or damage

In determining risk, the following matters should be taken into consideration:

- The magnitude of the risk,
- The degree of probability of its occurrence,
- The expense, difficulty and inconvenience of taking alleviating action, and
- Any other conflicting responsibilities.

It is essential to know the quantity and quality of the tree resource for which you are responsible. A tree survey is the common means of gathering information relevant to determining your level risk and priority for management. The tree survey forms the basis for establishment of a tree management policy.
10.10.2 TREE MANAGEMENT POLICIES

In order to reinforce the important role played by trees in the life of any area, there must be an ongoing commitment to the development and maintenance of appropriate urban tree cover. The uniform management of trees within each municipality should be contained within a policy document.

Tree management policies steer all activities which impact or are likely to impact on trees. Local Government tree policies may apply to both public and private trees. They are an important and critical tool for the tree manager to improve and maintain the health of a Council's tree populations.

Some fundamental information needs to be identified before a tree management policy can be drawn up, for example:

- What is the size, composition, health and condition of the tree population?
- Where are these trees located?
- What existing staff, equipment and methods are in place or required? and
- What are the financial resources and how are they to be allocated?

Tree management policies should not be regarded as a handbook on tree maintenance. The technologies employed and the complexity of tree management practices have increased considerably in recent years resulting in the publication of a large volume of information. Therefore technical and operational information should be contained in a separate operational procedures manual. (See the list of useful references).

Whilst there is no one tree management policy that Insurance companies endorses as ideal (this should be determined according to the peculiarities of each municipality) it is clear that Council’s should have some type of policy which will cover all aspects of tree management within the municipality. With the adoption of the Urban Forest Policy and the subsequent adoption and implementation of the Urban Forest Strategy, Leichhardt Council will be better positioned to deflect and possible claims and litigation in regard to alleged damage to property and possible injury to person in the future.

10.10.3 RESPONSIBILITIES AND AUTHORITY

The policy will provide a definition of the responsibilities and authority of Council officers and staff when dealing with arboriculture matters. This policy will reflect the Council's responsibilities and its authority to apply the policy. The Manager – Parks & Streetscapes and suitably qualified Parks & Streetscapes staff will be tasked with responsibility of implementing Council’s Urban Forest Policy and Urban Forest Strategy.
10.10.4 TREE INVENTORY AND DOCUMENTATION

To comply with the risk management guidelines as recommended by State Cover, Leichhardt Council has undertaken an inventory of trees starting with high use areas and street trees and known problems areas as well as currently looking at all other park trees, containing all relevant information including the location, species, size, approximate age, health and condition.

All complaints or notification of problems with trees from residents are recorded against the tree inventory and/or property location. Remedial action, maintenance and other work are recorded against the inventory or property location to build up a history of the work carried out.

10.10.5 IMPLEMENTING THE RISK MANAGEMENT STRATEGY FOR EXISTING TREES

It is necessary to systematically assess each tree under Council control in order to determine an appropriate risk management strategy. Figure 2 sets out the method for making such assessment.
FIGURE 2  EXISTING TREES – IMPLEMENTING A RISK MANAGEMENT STRATEGY

EXISTING TREE

- Have there been problems associated with the tree?
- Are there likely to be problems?

Determine a time frame

Implement a risk management strategy

Has the strategy been successful?

Review & monitor

Is the tree of significant value?
When assessing the financial risk of tree retention, Council will consider three matters:

- **Damage to Council property** - this information is obtained from maintenance records, replacement costs and the like held by Council;

- **Damage to third party property** - this includes damage to fences, paths and driveways, services, motor vehicles and homes, and;

- **Injury to third party** - slips, trips and falls as a result of damage attributed to trees and tree roots amount for about 30% of all claims received by Statewide Mutual (approximate). Council must be confident that its action in planting the tree does not increase its exposure.

### 10.10.6 TREE INSPECTION

In assessing a tree, it is necessary for an appropriately skilled and experienced person to systematically inspect the tree(s). A record should be kept of the inspection.

Any checklist should be used as a guide only; additional information may be required to make a reasonable assessment. It may be necessary for an above ground inspection to be performed. Accessing the tree must comply with the New South Wales WorkCover Code of Practice for the Amenity Tree Industry.

### 10.10.7 HAZARD ASSESSMENT

Hazard tree assessment is a systematic process for determining the potential for a tree or one of its parts, to fail and in so doing, injure people or damage property. Since trees are living, dynamic (ie constantly growing) organisms they do have the potential to cause damage or injury if a mechanical failure occurs.

The degree of hazard will vary with the size of the tree, type and location of defect, tree species, and the nature of the target. Tree hazard assessment involves three components:

- A tree with the potential to fail,
- An environment that may contribute to that failure, and
- A person or object that would be injured or damaged (ie. the target).

Each of these components and their interactions must be considered.

Hazards assessments must be carried out by appropriately trained and experienced persons. It must be understood that assessing whether or not to a
tree is dangerous is largely dependent on context. Details of hazard assessment are set out in Matheny & Clark (1994).

10.10.8 HAZARD ABATEMENT

Once a visual assessment, and if required, a hazard assessment has been performed, the appropriate risk management strategy should be determined. Table 3 lists risk management options for existing trees and the current steps undertaken by Leichhardt Council to diminish our exposure to possible damage and injury claims.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor trip points</td>
<td>Where no other practical method can be employed to prevent this occurring, a regular trip point inspection program should be instigated and pavement replaced or repaired as necessary. Council currently employs staff to assess these trip points and to implement the footpath repair and replacement programme based on this information</td>
</tr>
<tr>
<td>Flexible pathways</td>
<td>Use of flexible material such as bitumen, paving, or rubber compounds for footpaths and tree surrounds, will reduce the occurrence of trip points and is less expensive and easier than concrete to maintain or replace when necessary. Council currently undertakes this type of work and is looking to carry out further trials of flexible pavement on high lift tree root areas</td>
</tr>
<tr>
<td>Re-direct pathways</td>
<td>Where space allows, pathways should be re-directed away from trees/tree roots. It may also be beneficial to reduce the newly directed pathway width. Council has re-routed pathways as well as increasing the width of verges and kerbs to accommodate the tree and reduce the possible footpath and road hazard to retain the tree</td>
</tr>
<tr>
<td>Bridging Footpaths</td>
<td>Self-supporting construction methods, such as pier and beam could be used to raise pathways above the roots, allowing for root expansion without damaging the pavement. Timber bridges are an effective option and have been used to effect in Llewellyn St Balmain and are planned for inclusion to retain the fig on the pathway on the Louisa Rd side of Birchgrove Park</td>
</tr>
<tr>
<td>Root pruning</td>
<td>Non-structural roots could be pruned on a predetermined basis under the guidance of a qualified arborist. This practice could be combined with installation of root barriers where appropriate. Council regularly undertakes this practice where it will not affect the long term health of the tree and enables Council to reinstate the pathway and reduce the possible hazard</td>
</tr>
<tr>
<td>Root barriers</td>
<td>Where future problems are perceived, barriers could be installed to deflect roots away from pavement or services. Council has installed both flexible and non-flexible root barriers to reduce the damage to adjoining infrastructure</td>
</tr>
<tr>
<td>Tunnelling for services</td>
<td>Tunnelling (directional boring) rather than open trenching for underground services, will greatly reduce public risk as well reducing injury to tree roots.</td>
</tr>
</tbody>
</table>
If located deeply, root contact with the pipeline may be minimised as the majority of roots of most species will remain within the top 1 metre of soil (based on a soil with medium texture). Council has instructed number of utility companies such as Energy Australia, AGL and Telstra to underbore rather than trench for services around trees to ensure that the tree is not damaged and can be retained while still allowing for the necessary service provision and/or repairs to be carried out.

| PVC welded piping | Replacement of old porous clay pipe mains with PVC or polyurethane mainlines will significantly reduce the potential for tree root entry. This is mandatory when repairs are undertaken and has significantly reduced the re-offending of roots in the affected service pipes. |
| Preventative tree maintenance | Trees in public areas should be regularly inspected and maintenance, such as dead-wooding and developmental pruning carried out as prescribed. Pruning should always be undertaken in accordance with AS 4373-1996. Through Council’s adopted Cyclic Tree Maintenance programme, all street trees will be pruned and maintained every 2 years. This will significantly reduce the reactive works and will fix problems before they reach the stage where they negatively impact on the surrounding built form. |
| Raising pathways | Where appropriate, pathways could be raised to reduce direct root pressure on the pavement. Care must be taken not to build up soil against the trunk of a tree. Aeration piping, in conjunction with geo-textile fabric and gravel should be installed between root zone and new pavement to aid with gas exchange to roots. Care should be taken to shape the new surface to drain water away from the trunk of the tree. Council undertakes this practice where practical. |
| Insulated (ABC) cabling | Replacement of uninsulated overhead powerlines with insulated & bundled cables will reduce both the clearance needed and the pruning costs and severity. This has been undertaken in a number of streets where the existing significant treescape warrants its inclusion such as Trafalgar St Annandale. The cost of this however has been raised by Energy Australia and Council will need to negotiate with them to see if a cost sharing scheme can be introduced. |
| Underground power & communication s cables | The initially high cost of installing power underground may in fact be a practical option when compared with the projected cost of repeated pruning, the risk that this work involves to operators, the negative impact on trees, loss of public amenity and of urban forest economic contributions. Where possible, such as on mainstreet works, undergrounding is a viable option. In residential situations the cost is, t this stage prohibitive. |
| Diverting services | Services could be diverted along roadways, rather than in the nature strip where a valuable stand of trees is present. To make this option more attractive to service providers, Councils may wish to consider waiving road opening fees. Council will investigate this option where practical. |
| Diverting kerb/gutter | When possible, kerb/gutter could be diverted around tree roots or further away from the trunk, creating an island around the tree. Council currently undertakes this practice. |
| Enlarging root zone | Where space allows, a designated area above the root zone of the tree should be enlarged/created to accommodate surface roots. Rather than turf, this area could be formed into a garden bed, mulched or covered with a suitable tree grate. Council currently undertakes this practice and is looking to expand it through the adopt-a-verge programme. |
| Formative pruning | Early pruning will reduce the development of structural weaknesses in older trees. Refer to AS4373 Pruning of Amenity Trees. Through Council’s adopted Cyclic Tree Maintenance programme, all street trees will be... |
formative pruned and maintained every 2 years. This will significantly reduce the reactive works and will fix problems before they reach the stage where they negatively impact on the surrounding built form.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove target</td>
<td>In some situations it is preferable to remove a potential target, such as a seat rather than to remove a tree in order to abate a hazard. Council currently undertakes this practice.</td>
</tr>
<tr>
<td>Remove the defect</td>
<td>This could include pruning of live or dead branches or the removal of co-dominant stems. Council currently undertakes this practice.</td>
</tr>
<tr>
<td>Tree engineering</td>
<td>In some cases cabling may be used to support tree structure or to control the direction of a possible failure. This is highly specialised work. Council currently undertakes this practice.</td>
</tr>
<tr>
<td>Tree removal</td>
<td>In some situations it may be preferable to remove a tree and replace with a more suitable species, perhaps in an alternative location. In all cases of tree removal it is necessary to ensure that the removal is mitigated in order to ensure the future integrity of the urban forest. Council through its adopted Sequential Removal and Replacement policy is looking to remove unsuitable trees as identified through the tree inventory.</td>
</tr>
</tbody>
</table>

10.11 NEW TREE SELECTION AND PLACEMENT

10.11.1 INTRODUCTION

The long term success of urban tree plantings is the end result of a detailed process involving many players. It requires a detailed analysis of site conditions and design constraints. It requires an extensive knowledge of the inherent characteristics of a wide range of species. Long term benefits are gained when time is spent at the planning stage and when due consideration is given to solving potential conflicts and problems. Figure 3 illustrates a methodology for selecting trees.
FIGURE 3 - SPECIES SELECTION FLOW CHART

SELECT TREE SPECIES

Do you know the risk zone and site characteristics?
NO → see Table 4 and 5

Do you know the social/cultural context?
NO → see Table 6

Do you know species characteristics?
NO → see Table 1

Have you considered a risk management strategy?
NO → see Table 2
To assist with the proper selection of the most appropriate species of tree for each situation, Council will have, as part of the Urban Forest Strategy, lists of preferred trees developed. This is contained in Section 7 – Guidelines for Tree Management which will be bought to the Environment and Recreation Committee in May 2010.

### TABLE 4 - TREE PLANTING RISK ZONES IN STREETS

<table>
<thead>
<tr>
<th></th>
<th>ZONE B Moderate constraints (Moderate risk)</th>
<th>ZONE C Fewest constraints (Minimum risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical &amp; telecommunication</strong></td>
<td>β uninsulated low and high voltage wires, bushfires area</td>
<td>β bundled cables (ABC), insulated cables</td>
</tr>
<tr>
<td><strong>Below ground services typical layouts</strong></td>
<td>β fibre optic cables, high voltage power</td>
<td>β water mains, gas mains, stormwater</td>
</tr>
<tr>
<td><strong>Slope</strong></td>
<td>β steep slope</td>
<td>β moderate slope</td>
</tr>
<tr>
<td><strong>Paved areas</strong></td>
<td>β area wholly paved, surface wholly sealed, brick pavers laid on sand bedding</td>
<td>β partially paved areas, non reinforced concrete</td>
</tr>
<tr>
<td><strong>Verge width</strong></td>
<td>β less than 3.0m</td>
<td>β from 3m to 4m</td>
</tr>
<tr>
<td><strong>Building set back</strong></td>
<td>β none</td>
<td>β less than 6m</td>
</tr>
<tr>
<td><strong>Street lighting</strong></td>
<td>β over pedestrian crossings, traffic intersections</td>
<td>β street lighting other than crossings and intersections</td>
</tr>
<tr>
<td><strong>Safety signage ie traffic signs</strong></td>
<td>β dual carriageways, arterial roads, high density residential streets</td>
<td>β medium density residential streets, arterial roads in rural zones</td>
</tr>
<tr>
<td><strong>Traffic</strong></td>
<td>β heavy vehicles, public transport in heavy volumes</td>
<td>β public transport in moderate volume, heavy vehicles in moderate volumes</td>
</tr>
</tbody>
</table>
Soils

- $\beta$ severely compacted
- $\beta$ shallow
- $\beta$ reactive clay
- $\beta$ acid sulphate
- $\beta$ poor drainage

Moderately compacted

Undisturbed soil

Deep profile

Medium texture

Good natural drainage

Water table

- High
- Moderate depth
- Deep water table

Areas in column A with most constraints represent the highest potential risk and therefore require greater emphasis on risk management. These areas are typical of CBD, high-density sites, tourist precincts and the like where trees are highly desirable and often critical components of the landscape. In these areas the objective should be to minimise risk associated with trees by selecting trees that will have minimal impact on and have minimal impact by their new environment.

### TABLE 5 - TREE PLANTING SITE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Column A</th>
<th>Most Constraint</th>
<th>Column B</th>
<th>Moderate Constraint</th>
<th>Column C</th>
<th>Least Restraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate</td>
<td>$\beta$ Frontline salt wind exposure $\beta$ Prevailing wind exposure $\beta$ Rain shadow $\beta$ Extensive sealed ground surface</td>
<td>$\beta$ Second line coastal salt influence $\beta$ Moderate wind exposure $\beta$ Partial rain shadow $\beta$ Partial ground surface sealed</td>
<td>$\beta$ Minimum salt influence $\beta$ Minimal wind exposure $\beta$ No rain shadow $\beta$ Minimal ground surface sealed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope</td>
<td>$\beta$ Steep slope</td>
<td>$\beta$ Moderate slope</td>
<td>$\beta$ Minor slope to flat land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspect</td>
<td>$\beta$ Southern &amp; Western exposure</td>
<td>$\beta$ Either southern or western exposure</td>
<td>$\beta$ Northern &amp; eastern exposure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street – Width &amp; Usage</td>
<td>$\beta$ Narrow; CBD residential &amp; commercial; $\beta$ Arterial –high traffic volume</td>
<td>$\beta$ Non CBD; narrow residential &amp; commercial; $\beta$ Suburban collector roads – medium volume traffic</td>
<td>$\beta$ Average to wide residential/commercial $\beta$ Wide residential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil – Type and Drainage</td>
<td>$\beta$ Reactive clay $\beta$ Poor drainage $\beta$ Salinity</td>
<td>$\beta$ Non reactive clay $\beta$ Average drainage</td>
<td>$\beta$ Free draining open textured soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>$\beta$ Above ground and below ground utilities</td>
<td>$\beta$ Above or below ground utility services</td>
<td>$\beta$ No utility services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6 - SOCIAL AND CULTURAL CONTEXT

<table>
<thead>
<tr>
<th>CONTEXT</th>
<th>IMPORTANCE</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOW</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Wildlife habitat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street character</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heritage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscape character</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural style</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10.11.2 RISK MANAGEMENT OPTIONS FOR NEW TREE PLANTING

Most of our tree related problems are caused by inadequate tree selection and placement, with current tree managers inheriting problems caused many years before. The wrong tree in the wrong place can cause major problems including:

- roots blocking and cracking sewer and storm water pipes,
- lifting and cracking pavements and roads,
- damaging building foundations,
- poor traffic visibility,
- pedestrian access problems, and
- stoppages to power supply.

It is therefore vital that the current and effective risk management strategies, listed below, are continued to be employed.

TABLE 7 - RISK MANAGEMENT CONTROL STRATEGIES

<table>
<thead>
<tr>
<th>Control Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root barriers</td>
<td>Installation of root barriers to manufacturers specification at the time of planting will assist tree roots to develop away from services, pavements and other structures. NOTE OF CAUTION Tree root barriers do require periodic monitoring as roots deflected downwards will return to the surface if soil oxygen levels are not sufficient to support growth at depth. Roots can also grow over the barrier in some situations.</td>
</tr>
<tr>
<td>Soil compaction</td>
<td>Proper compaction of the soil when back filling trenches or around utility easements and house footings will direct tree roots away from these areas. By achieving and maintaining</td>
</tr>
</tbody>
</table>
Compaction to 95% root growth can be inhibited through the depravation of oxygen.

<table>
<thead>
<tr>
<th>Pseudo street trees</th>
<th>Residents could be encouraged to plant trees within their boundaries in preference to street tree planting. This might allow larger species to be used, and reduce pressure on pavements and services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of new roads and pathways</td>
<td>The design of new roads and footpaths should be undertaken with consideration for tree planting on the nature strip or in the road pavement to ensure appropriate allocation of space.</td>
</tr>
<tr>
<td>Provision of aeration and irrigation</td>
<td>Where there is to be continuous paving around a tree, the installation of an aeration and irrigation system should be considered. Where irrigation is installed and properly operating, a tree root system will be proportionally smaller than without irrigation.</td>
</tr>
<tr>
<td>Pavement Openings</td>
<td>Pavement openings at the base of the tree should be as large as possible to reduce the future impact of buttressing roots on pavements. Position of the tree should be a good distance from the kerb line to reduce the likelihood of future cracking.</td>
</tr>
</tbody>
</table>

4. **Conclusion**

With the adoption of the UFP and the eventual adoption of the Urban Forest Strategy, Council will be in a better position to maintain and enhance the Leichhardt urban forest both now and into the future.

The value of urban trees and risk management sections, which Council is asked to adopt will be a further step towards realising this vision and will allow staff and the community to be able to see a quantitative and qualitative method of assessing, managing and maintaining our tree assets.
ENVIRONMENT & RECREATION COMMITTEE
OPERATION GUIDELINES

1. Date & Time
   - First Wednesday of every second month commencing in February.
   - 6:30pm – 8.30pm. The timing of the meeting can be extended by vote on the night.

2. Location
   - Leichhardt Town Hall Supper Room

3. Chair
   - Elected by Councillors and as determined

4. Quorum
   - Two Councillors (including chair)
   - In the absence of a quorum at the Environment & Recreation Committee meeting, it is proposed that the meeting proceed as long as one (1) Councillor is present (ERC10/05).

5. Time period to wait for Quorum
   - 30 minutes from starting time of meeting

6. Councillor and Staff Attendance
   - 4 Councillors
   - Manager Environment & Urban Planning and/or
   - Senior Environment Officer, Environment Officer
   - Senior Recreation Planner, Recreation Officer

7. Community Representation
   - Participation by community members, representatives of local community organisations and government agencies is to be actively encouraged.

8. Decision made by Committee
   - Decisions are made by majority vote of Councillors and community representatives.
   - Where a vote is tied the Chair shall exercise a casting vote.
   - Committee meeting minutes, including all decisions made by the Committee shall be referred to a meeting of Council to be endorsed.
   - Following the absence of a quorum at the Committee meeting, the Committee Agenda will be reported to the Ordinary Council meeting as a supplementary item (ERC10/05).

9. Agenda and Report Availability
   - Agendas and reports will be circulated to committee members by mail in the week prior to meeting.
   - Agendas and reports will be made available to the public 7 days prior to the meeting.

10. Conflict of Interest
    - At the commencement of each meeting the chairperson will ask all persons present to declare any conflicts of interest in relation to any items on the agenda. The chairperson will determine what action should be taken if such a conflict.