TO ORDINARY MEETING OF COUNCIL 27/04/2016

ITEM NO:	2.	**FILE NO**: S30.11.4	
DESTINATION 5:	The communities are served by sustainable services and infrastructure		**S**
SUBJECT:	**PLANE TREE MANAGEMENT INVERELL TOWN CENTRE**		
PREPARED BY:	Brett McInnes, Director Civil & Environmental Services		

SUMMARY:

This report has been initiated by the completion of an Arborist Assessment on behalf of the Concerned Inverell Ratepayers Association regarding Plane Tree Management in the Inverell Town Centre. Council is being asked to consider what action it wishes to take in response to the assessment.

COMMENTARY:

Introduction

The Concerned Inverell Ratepayers Association (CIRA) commissioned New Leaf Arboriculture (NLA) to undertake a Plane Tree Arboricultural Assessment on their behalf. The Assessment was tabled at the Ordinary Meeting of Council on 23 March, 2016.

A full copy of the NLA Assessment was subsequently circulated to all Councillors by email on the 25 March, 2016 for their consideration.

The NLA Assessment has now been reviewed by Council staff and consultant Arborist, Mark Hartley.

A key component of the NLA Assessment is the recommended retention of the Plane Trees in the town centre given their assessed useful life expectancy. The report identifies, from an arboricultural perspective, a number of measures that should be implemented to sustainably manage the existing Plane trees.

This report provides commentary on the key aspects of the NLA Assessment and considers the impact of implementing the measures recommended by NLA.

Information Limitation

In Section 3.1 of the NLA report they acknowledge the limitations of their assessment based on the information they have been provided. They also include a disclaimer around the accuracy of information they have been provided by others.

Unfortunately, at no stage has any representative of NLA made contact with Council regarding the assessment they were undertaking. Council, as the tree asset manager, holds a range of information that would likely have been beneficial to someone undertaking such an assessment.

Council considered a substantial report in August, 2015 regarding future management of Plane Trees in the town centre. A copy of this report has been included as Appendix 1 (D10-D50) as it is relevant to a number of recommendations contained in the NLA assessment. It is unknown if the NLA Arborist reviewed this report as it is not listed as a reference document in Section 3.4 of their assessment.

The Site and Tree Selection

Section 1.4 of the NLA Assessment describes and provides a map of the study area. It is interesting to note the study area included six (6) Plane trees planted in the centre median in Evans Street that Council has clearly indicated on numerous occasions there is no proposal to remove. On the other hand, the section of Byron Street between Campbell and Otho Streets was excluded from the assessment. At the time the field work was undertaken for the NLA assessment this section of Byron Street contained six (6) Plane Trees planted in concrete pipes that were not assessed. It is unsure if this was a conscious decision or not as no rationale was provided for the site selection.

A "representative" sample of 26 trees in the study area was selected by NLA for the purpose of a Visual Tree Assessment. This included 8 trees that have not been inappropriately planted in a concrete pipe and are situated outside of the core CBD. These trees have not been identified by Council for removal.

Urban Forest Approach

Section 2.1 of the NLA report talks about best practice tree management and the urban forest approach. There would appear to be some common ground between Council and NLA in regards to this aspect. In particular, recognising the importance of trees in the urban environment, planning for future tree management, succession planting and strategic planning.

Since June 2014, when Council adopted the concepts contained in the Town Centre Renewal Plan (TCRP) to guide the future development of the town centre, a total of 26 Plane Trees have been removed. This included 15 Plane Trees under high voltage power lines in Campbell and Rivers Street and 11 inappropriately planted Plane Trees in Byron and Otho Streets. During this same period, Council has planted in excess of 200 advanced trees in the town centre. Council is currently investigating further tree planting opportunities in the town centre and this is consistent with the recommendation contained in the TCRP to *plant in appropriate locations and with appropriate planting techniques, as many trees as possible*. Such a large scale planting of advanced trees in the urban area had not been previously undertaken by Council for many years.

Council recognises the importance of strategic planning to guide decision making on urban trees. The completion of several Arborist Reports and the TCRP has provided the basis for longer term planning around the town centre. Council has also committed to preparing a broader Tree Management Plan for the Inverell Township.

Strategic Land Use Planning

The author of the NLA assessment has sought to link clauses from Council's Local Environmental Plan (LEP) to the management of Plane trees in the town centre. Council's Manager Development Services has provided commentary in relation to this below:

> *Section 2.3 of the Plane Tree Aboricultural Assessment relates to Tree Management Controls and specifically references Clause 5.9 – Preservation of Trees or Vegetation contained within the Inverell Local Environmental Plan 2012.*
>
> *By way of background, the Inverell Local Environmental Plan 2012 was prepared in accordance with the Standard Instrument (Local Environmental Plans) Order 2006 and Standard Instrument—Principal Local Environmental Plan, which applied to all Local Government Areas throughout New South Wales. Clause 5.9 was compulsory for all standard instrument local environmental plans, including Inverell's. However, as stated in Clause 5.9 (2) it only applies where a Council has a specific Development Control Plan relating to the preservation of trees or vegetation.*
>
> *(2) This clause applies to species or kinds of trees or other vegetation that are prescribed for the purposes of this clause by a development control plan made by the Council.*

Whilst certain chapters of the Inverell Development Control Plan 2013 may refer to "mature trees" and "significant trees", these terms are in reference to Chapter 2 - Subdivision and has no relevance for the purpose of Clause 5.9 of the Inverell Local Environmental Plan 2012. Therefore, Clause 5.9 of the Inverell Local Environmental Plan 2012 does not apply to the preservation of trees on any land within the Inverell Local Government Area, including the Plane trees within the town centre.

Furthermore, where Clause 5.9 of the Inverell Local Environmental Plan 2012 does not apply, the provisions of Clause 5.9AA become a relevant consideration, refer subclause (2).

5.9AA Trees or vegetation not prescribed by development control plan

(1) This clause applies to any tree or other vegetation that is not of a species or kind prescribed for the purposes of clause 5.9 by a development control plan made by the Council.

(2) The ringbarking, cutting down, topping, lopping, removal, injuring or destruction of any tree or other vegetation to which this clause applies is permitted without development consent.

Clause 5.9AA is very clear that development consent is not required for the removal of trees that are not prescribed by a development control plan made by Council.

On this basis, and considering the discussion above, Section 2.3 of the Plane Tree Aboricultural Assessment is erroneous and not relevant to the assessment of the Plane trees in Inverell's town centre. During the preparation of the report, the consultant had the opportunity to take advantage of Council's free town planning advice service, which would have provided assistance in the correct interpretation of planning controls relating to tree management.

Infrastructure Interactions

In section 4 and 5 of the NLA assessment the Arborist makes a number of comments regarding the interaction of the Plane trees with surrounding civil infrastructure and how this should be managed into the future. Council's Manager Civil Engineering was asked to comment on this matter and provided the following response:

I have read the Plane Tree Arboricultural Assessment by Jacki Brown, as provided by CIRA, and would make the following comments:

- *Section 4.6 Infrastructure Interactions – "Minor infrastructure interactions….small cracks in kerb and guttering, slight lifting of pavers".*

I would not consider it reasonable to class the damage caused by the plane tree roots to kerb and gutter, garden beds and paving as minor or small. Average displacement of kerb by the plane trees, in effected areas is estimated at 50mm, including cracks of this dimension. Some garden beds were cracked, lifted and displaced by up to 125mm. Displacement of pavers is an ongoing significant concern with one work crew completing at least one full days work each fortnight to make safe footpaths that have trip hazards that are caused by plane tree roots. While this ongoing maintenance work does limit the amount of defects that are evident at any time, you don't need to look far to see significant damage. Paving and garden edging adjacent to the pedestrian crossing near the Australian Café is a prime example. Pavers in the area are displaced by some 75mm to 85mm, work has previously been undertaken in this area to re-level the pavers and the roots have yet again caused damage. To consider this infrastructure interaction as slight lifting is significantly understating the issue.

- *Section 4.11 Proposed Streetscape Design – "The median does not appear to be designed as a WSUD feature ie the road camber sloping towards the centre…"*

The proposal of inverting the road camber would be extraordinarily expensive to implement, involving complete restructure of the pavement, kerb and drainage levels. Ongoing maintenance of such a design would also be significantly increased. The benefits suggested from such a drastic design change would be considerably less than the cost to implement.

- *Section 5.1 Best Practice Management of Existing Trees – Practical – " upgrades should be designed to provide larger spaces around trees (eg minimum, of 4mx4m)*

Providing a minimum opening around each plane tree of 4mx4m would significantly reduce the number of car parking spaces available in the CBD. For most trees planted in the pavement, two (2) car parking spaces would be lost and for most trees in a kerb return blister, one (1) car parking space would be lost. Also, each pedestrian crossing location would need to be completely re-designed and upgraded to accommodate such an opening around the trees.
It is also mentioned in the report that additional openings have been provided around the newly planted chanticleer pears and that this could be done around existing plane trees. Our experience in maintaining and removing the plane trees has shown that it is simply not possible to provide greater open areas around the existing plane trees due to the masses of roots that cascade over the concrete pipe they are planted in creating a thick mass of root. Providing the additional opening for the pears was only possible once the roots were removed.

Section 5.1 also notes that the trees would benefit from vertical mulching of the soil; this would not be possible given the masses of roots that exist around the base of the trees, over the concrete pipes. Section 5.1 also notes traffic management requirements to reduce future tree damage. All of these measures would further reduce the number of car parking spaces in the CBD.

- *Section 6.9 Tree Removal – "Tree removal should only be considered…..where the tree presents an unacceptable risk of injury or major property damage…"*

This section of the report highlights an issue in which there is agreement between Council and the NLA as this is essentially the reason that the trees have been removed. The tree removal to date has been focused on the trees that have caused the most significant infrastructure damage, posed the greatest risk to personal safety and hence created the largest maintenance burden.

The Supervisor Urban Maintenance has reported to me that since the first removal of Plane trees in September 2015, the reactive CBD maintenance work required of his work crews has significantly decreased. This has allowed for better utilisation of staff time and more proactive planned maintenance in other areas that would otherwise be neglected.

The report makes comment regarding previous incorrect pruning practice and gives recommendations regarding engaging suitably qualified personnel to undertake tree maintenance. Council does receive a significant number of complaints from building owners and business operators regarding the need for Plane trees to be trimmed. These complaints are taken seriously as they relate to property damage, including flooding caused by leaves and debris from the trees. In recent times, appropriately qualified contractors have been engaged at considerable cost to Council to undertake these maintenance works, including the works at the Henderson Street roundabout mentioned in the report.

Mark Hartley Comment

Consulting Arborist Mark Hartley was requested to review the NLA Assessment and to provide Council with expert comment. Mr Hartley's report has been included as Appendix 2 (D51-D65).

Key aspects of the Hartley report have been detailed below:

- Acknowledgement that there is a general consistency in the observations contained in the NLA report and previous Tree Reports prepared by the Arborist Network for Council.
- Highlights the failure of the NLA Assessment to consider a number of relevant matters that would likely have impacted upon their key recommendations.
- Provides clarification around the use of the Useful Life Expectancy system and acknowledges the substantially shorter lifespan of the Inverell town centre Plane trees compared to others in an urban setting.
- Provides additional information regarding amenity tree valuation and the arbitrary nature of the system. Also cautions against some of the extrapolations NLA have made in regards to the Thyer valuation system. Despite the arbitrary nature of tree valuation, there is an agreement that trees do provide amenity and that amenity is of value.
- A cost benefit analysis is completed on the basis of implementing the NLA recommendations for the 26 trees they sampled. This concluded the cost of deferring the removal of the trees would be in the order of $270,000.
- Despite the uniqueness (trees planted in pipes) of Inverell's situation, it was indicated that we are not alone in the consideration of removing Plane Trees from the urban environment with several other examples referenced.
- Reconfirms the removal of the Plane trees to be regrettably the most appropriate option.

Urban Canopy

Sections 4.11 and 5.5 of the NLA report attempts to model the level of canopy cover provided from the streetscape design contained in the TCRP. Unfortunately, this attempt has been erroneous and misleading. It would appear that NLA have looked at one appendix (Exhibit 3) contained in the TCRP and formed the view that if an existing tree was not shown on the plan than it is proposed to be removed. The intent of Exhibit 3 in the TCRP was to show what the typical at grade centre median and associated new planting would look like. Council has been very clear to state that there is no proposal to remove any of the existing Chinese Pistachio edge plantings. This is supported by the TCRP which states that the Chinese Pistachio "*should not be replaced unless they are clearly showing poor health and detracting rather than contributing to the streetscape*". Furthermore, the staged removal of Plane Trees in the CBD includes replacement planting with a minimum of one Chinese Pistachio or Ornamental Pear. This also does not appear to have been fully factored into the canopy coverage modelling. Whilst there was no methodology provided to support the canopy coverage modelling contained in the NLA report, it would appear to be predicated on a lack of understanding of adopted plan and replacement strategy. Again, discussions with Council could have avoided such a situation arising.

Significant concern has been raised by some parties in respect of the loss of urban canopy from ultimately replacing the inappropriately planted Plane trees in the CBD with alternate edge plantings. Whilst the community is familiar with the mature Chinese Pistachios that exist on the street edges, the use of ornamental pears will provide a new addition to the tree palette in the town centre. The *Pyrus calleryanna,* Chanticleer Pear that has been planted in the CBD will reach a mature height of 10 to 12 metres (about the same height as a three (3) storey building) and canopy width of approximately six (6) metres. NATSPEC *Specifying Trees* author and respected advanced tree grower, Mr Ross Clark, has advised Council that the modern Chanticleer Pear cultivar have a life expectancy of 40 to 50 years in the urban environment. Council recently received a letter from a local resident raising concern about a possible objectionable odour during the three (3) week flowering period of the Chanticleer Pear. The resident cited American web sites relating generally to the Callery pear species. This matter had been previously discussed with specialist tree suppliers and Arborists, none of which were aware of any examples in Australia where Chanticleer Pears had created an unreasonable odour impact. This included situations where they have been planted in much greater densities in urban environments than would be envisaged for the Inverell CBD. Discussions with other Councils that have utilised Chanticleer Pears for urban street plantings have also not identified any concerns regarding odour problems. Used extensively as a street tree in Australia, the moderately growing Chanticleer Pear is not expected to create an unreasonable maintenance burden for Council.

Further information regarding the Chanticleer Pear is included in Appendix 3 (D66-D67). This includes a recent photograph of Chanticleer Pears that were planted in the main street of Coonabarabran in 2005.

Whilst the Chinese Pistachios and Ornamental Pears are suitable edge plantings, it is not suggested they will provide an adequate urban canopy on their own. The TCRP provided for the construction of an at grade centre median containing the larger (up to 30 metres in height) Pin Oak trees to supplement the edge plantings. Council secured access to some early defoliant form "Freefall" Pin Oak cultivars in August 2014, which are being grown on to super advanced plantings. Pin Oak trees are used extensively for street tree plantings in various locations in Australia. Engineers Australia, the peak representative body for the engineering profession, along with the National Arboretum Canberra consider the "Freefall" Pin Oak to be an excellent street tree (see Appendix 4, D68).

It is acknowledged if Council did not proceed with an at grade centre median it would be necessary to look at further tree plantings that could be combined with the nominated edge species to result in a desirous urban canopy.

Expanding Tree Surrounds

A key recommendation contained in the NLA assessment (Section 5.1) is to prioritise the expansion of the openings around existing Plane Trees. It is suggested these openings should be a minimum of 4 x 4 metres. Further, where trees are planted in the parking lanes the tree openings should contain garden beds with shrubs and grasses to "*discourage carparking too close to the trees*". The idea of providing a garden bed treatment around the existing trees is not new and was given consideration in the August 2015 report to Council (see Appendix 1, D10 – D50).

The use of structural cells in combination with semi permeable paving can provide at grade tree planting beds that minimise impact on vehicle movement and parking. This technology was discussed in the TCRP and would be utilised for the construction of the at grade centre median. Given the nature of the root structure of the existing trees in concrete pipes, Mark Hartley has confirmed (page 5 of Hartley report) it is entirely unsuitable to retrofit the likes of structural cells and root trenches around these trees. Therefore implementing the "practical" measures identified in section 5.1 of the NLA report would have a significant impact on carparking spaces in the CBD.

In Byron Street (between Campbell and Wood Streets) and Otho Street (between Rivers and Byron Streets) there are 48 Plane Trees. Of these trees, there are 20 that are situated within the sealed roadway and currently have no dedicated opening. To provide the recommended garden opening around these trees would in most instances delete two (2) existing parking spaces per tree. There are another 20 trees that are located in crossing or corner blisters in close proximity to kerb returns. To provide the necessary opening around those trees would in most instances delete one (1) existing car space. The remaining 8 trees are already in raised beds of varying configurations that have the capacity to be enlarged without necessarily impacting on existing parking spaces. These 8 trees are not contained within concrete pipes. An on ground assessment in the area discussed indicated more than 50 parking spaces would be lost if the measures suggested by NLA were implemented. This included five (5) disabled parking spaces.

Whilst providing a large garden opening around the trees is perceived by some as a panacea to the infrastructure damage issues faced by Council, this is simply not the case. Hartley (pages 6 & 7) indicated there would be some reduction in damage for a few years by increasing the size of openings. However, as the trees age, "*the roots will continue to grow under adjacent hard surfaces resulting in the same need to undertake repair works".*

The paragraph below has been reproduced from the August 2015 report to Council (Appendix 1) as it relates to Council's first hand experience with continued root growth outside the perimeter of a tree bed:

"An example worth considering closer to home, is the mature Plane Trees in planting beds at the front of the Council Administration Office in Otho Street. These trees are estimated to be in excess of 50 years of age and contained in planter beds approximately 3 metres by 2 metres. A significant concrete root barrier was also installed approximately 12 years ago between the tree beds and the kerb.

Despite this treatment, the tree roots have breached the barrier and have created ongoing issues with lifting pavers. It has been necessary to repair the pavers at least five (5) times around the one (1) tree in the last three (3) years. A number of Councillors witnessed the most recent repairs with large roots needing to be pruned some 9 metres away from the tree. These older trees in this section of Otho Street do not have the added complexity of being contained within a concrete pipe with spill over roots."

Tree Valuation and Cost Benefit Considerations

Despite assertions to the contrary, Council has never indicated the Plane trees in the town centre had no value. The August 2015 report (Appendix 1) included a copy of the tree valuation exercise completed by CIRA for the information of Council. A section of the report was also dedicated to cost benefit considerations. In this section some of the maintenance costs associated with the trees were compared against what experts considered to be the gross annual benefit provided by a mature tree in an urban environment. Whilst this exercise clearly indicated the maintenance costs as exceeding the annual benefit per tree, it did not draw any conclusion in relation to tree valuation. The report also contained advice from Council's Director Corporate & Economic Services indicating that tree asset values cannot be included in Council's Asset Register or Financial Statements. Whilst this clarified accounting standards relating to trees, it again made no suggestion of the trees as having no value.

The cost benefit analysis undertaken by Mark Hartley (Appendix 2) conservatively estimates the cost of deferring the removal of the plane trees until they approach the end of their arbitrary useful life at $270,000. This analysis was undertaken on the 26 trees sampled as part of the NLA assessment. The sample included 8 trees that are outside the core CBD, are not in concrete pipes and in some instances already contained in enlarged openings. Hence, this had the effect of reducing the overall costs associated with the sample.

If the analysis was applied to all Plane trees contained within Otho Street (between Rivers & Byron Streets) and Byron Street (between Campbell and Wood Streets) the deferment cost would be in excess of $500,000.

It should be noted that Mark Hartley has used the developer contribution figure of $3,035 per space from Council's Developer Contributions Plan to apportion a cost to the loss of a parking space in the CBD. In reality, the cost of replacing a parking space is in excess of double that figure when land purchase and construction costs are taken into consideration.

Arborist Qualifications and Experience

Arboricultural Consultant Jacki Brown who prepared the Plane Tree Assessment on behalf NLA has only listed her educational qualifications and memberships and has provided no information in regards to her relevant experience. A publicly available LinkedIn professional profile of Jacki Brown has been included as Appendix 5 (D69-D76). This provides additional information in regards to Ms Brown's skills and experience.

As Council would be aware, Mark Hartley is an internationally respected highly experienced AQF Level 8 Arborist. Details of Mark's qualifications and experience were included in a previous Tree Report to Council. An abbreviated curriculum vitae is included in a letter from Mark Hartley also contained in Appendix 5. This enables anyone reading this report to draw their own conclusions with respect to the credentials of the two (2) consultants.

Regrettably, some CIRA members have chosen to question the integrity of Mark Hartley. In the letter referred to in Appendix 5, Mark clearly establishes his consulting relationship with Council. Council has never at any stage utilised the services of Mark Hartley or any company he may be affiliated with to do anything but provide professional tree management advice. Mark also clarifies his membership of professional bodies and associated ethical standards. It is hoped the comments provided by Mark Hartley will put an end to any naïve conspiracy theories regarding his professional relationship with Council.

Conclusion

Significant consideration has been given to the contents of the NLA Plane Tree Assessment commissioned by CIRA. This included an expert arboricultural evaluation by Mark Hartley.

Key recommendations from the NLA assessment include the retention of the Plane trees within the CBD until they approach the end of their assessed useful life and to expand the existing openings around these trees. It is considered this would come at a long term cost of over $500,000 and result in the loss of over 50 car parking spaces in the town centre. The NLA assessment made no attempt to determine the cost or impact of their recommendations. Apart from recommending an Arborist be present when tree roots are cut, NLA also gave no consideration to how some of their recommendations would be implemented given the compromised root structure of those trees planted in concrete pipes.

Despite the costs and impact, it is likely a case will continue to be made to retain the current trees. This is discussed in the Hartley review of the NLA assessment and the relevant paragraph reproduced below:
There is some merit in deferring the removal of the tree. Not only does it give the immediate benefit of retaining the trees, it defers the problems to a future generation. At that point in time, having expended considerably on improving the condition and maintaining the trees, the future generation will be left with greater cost associated with the removal of bigger trees, and the loss of even more tree canopy. At that juncture in time, the community will be again addressing the same issues and the current generation will have left no durable tree legacy to the future generations.

Council has a governance responsibility to consider a wide range of factors associated with the management of Plane trees in the town centre. This includes arboricultural assessment, risk management and public safety, financial impacts, community sentiment, sustainability, amenity and the environment.

The above considerations regarding Plane trees are not unique to Inverell, with numerous other Councils facing similar situations. Mark Hartley cited several examples in his report. Appendix 6 (D77-D90) also contains a range of other examples from larger cities such as Melbourne and Newcastle and regional NSW locations including Goulburn, Wagga Wagga and Bathurst. A common thread in these examples is the unsuitable nature of the Plane tree in certain locations, the vigorous root system, damage to property and infrastructure and the need for a suitable replacement planting. Whilst Melbourne has been cited to Council as an example on how to manage Plane trees, it is interesting to note their policy decision to massively reduce their number of Plane trees in the inner city from 75% coverage back to 5% coverage. What does seem unique to Inverell however, is the additional challenges faced by trees having being planted in concrete pipes.

Whilst there appears to be a consensus amongst all parties as to the important role an urban canopy plays in the town centre there is a diversity of views as to how that should be sustainably provided.

This is echoed by Mark Hartley in his latest report where he states "*There is not, and never will be, a perfect management plan for these trees. Regardless of the actions taken, one party or another will be justified, at least from their perspective, in complaining about the action taken.*

RELATIONSHIP TO STRATEGIC PLAN, DELIVERY PLAN AND OPERATIONAL PLAN:

Strategy: S.05 Attractive and vibrant town centres, local centres and community meeting places are provided.

Term Achievement: S.05.01 Local centres, community facilities and prominent meeting places are increasingly valued and recognised by the community as a focus of their village and feature of the Shire.

Operational Objective: S.05.01.01 Engage the Shire's communities in identifying and creating community places that are valued and used.

POLICY IMPLICATIONS:

Nil.

CHIEF FINANCIAL OFFICERS COMMENT:

Nil.

LEGAL IMPLICATIONS:

Nil.

RECOMMENDATION:

A matter for Council.

APPENDIX 1

MINUTES OF THE ORDINARY MEETING OF INVERELL SHIRE COUNCIL HELD IN THE COUNCIL CHAMBERS, ADMINISTRATIVE CENTRE, 144 OTHO STREET, INVERELL ON WEDNESDAY, 26 AUGUST, 2015, COMMENCING AT 3 PM.

SECTION D
DESTINATION REPORTS

3. PLANE TREES INVERELL TOWN CENTRE S30.11.4

70/15 MOTION *(Michael/Johnston) that Council adopt Option 1, being that Council commence the staged removal and replacement of inappropriately planted London Plane Trees in the CBD as soon as practicable.*

AMENDMENT (Girle/Jones) that:

i) the locations of all existing tree edge plantings in the CBD be maintained;
ii) the trees be replaced with the identified suitable species planted in an appropriate manner; and
iii) the proposed centre median be removed from the Town Centre Renewal Plan.

The amendment on being put to the meeting was LOST. The motion on being put to the meeting was CARRIED.

ITEM NO:	3.	**FILE NO**: S30.11.4	
DESTINATION 2:	A community that is healthy, educated and sustainable		**C**
SUBJECT:	**PLANE TREES INVERELL TOWN CENTRE**		
PREPARED BY:	Brett McInnes, Director Civil & Environmental Services		

SUMMARY:

This report has been initiated by the completion of a Peer Review of the "Tree Report" completed by Arborist Mr Mark Hartley in 2012. Council is being asked to consider the contents of the Peer Review and other information provided in this report and to determine a course of action in relation to the long term management of the London Plane trees in the Inverell CBD.

COMMENTARY:

Introduction

Subsequent to a meeting with representatives of the Concerned Inverell Ratepayers Association (CIRA), Council at its April 2015 meeting resolved the following:

i) a suitably qualified Arborist be engaged to provide a peer review of the recommendations contained in the original Arborist's report;

ii) the brief for the Peer Review be "Council is seeking the services of a minimum AQF Level 5 qualified and experienced Consulting Arborist to undertake an independent peer review of the recommendations regarding the long term management of London Plane trees in Otho and Byron Street, Inverell as contained in the "Tree Report" prepared by Mr Mark Hartley on 23 April, 2012. The review shall include an onsite general inspection of the subject trees."; and

iii) the Concerned Inverell Ratepayer's Association be advised of Council's position.

Consistent with the resolution, the Peer Review has now been completed.

Peer Review

Council engaged consulting Arborist Mr Roy Cody of Roy's Tree Service to conduct the Peer Review. Mr Cody has obtained international qualifications as an Arborist and has many years experience in the industry.

Unfortunately, due to Mr Cody suffering serious illness there was a significant delay from his initial engagement in late April until he was able to complete his report.
Mr Cody was provided with a copy of the "Tree Report" prepared by Mark Hartley dated 23 April, 2012 and a copy of the associated resolution from the April, 2015 Council meeting.

On 22 July, 2015, Mr Cody undertook an inspection of the Plane Trees and surrounding infrastructure in the Town Centre. Mr Cody's own observations enabled him to make recommendations regarding the long term management of the Plane Trees. Mr Cody was also asked to provide commentary on the management option of retrospectively establishing garden type beds/barriers around the base of the trees. This suggestion was put forward by CIRA as part of their inventory and evaluation exercise completed on the 18 May, 2015.

Council received the Peer Review Report from Roy's Tree Service on 28 July, 2015. Key aspects of the report included the following:

i) The author considered Mark Hartley to be possibly the most knowledgeable and experienced Arborist in Australia and noted that Mr Hartley is held in high regard on the international arena.
ii) The installation of garden beds around the base of the trees is only considered a short term solution and would unlikely prevent the escape of roots into surrounding paved areas.
iii) There are significant risks associated with trimming the surface roots of the trees to deal with infrastructure damage (e.g. root rot and stability issues).
iv) The original method of planting has seriously reduced the life expectancy of the trees.
v) The best long term solution is the staged removal and replacement of the London Plane Trees.

A copy of the Peer Review Report is contained in Appendix 1 (D17 – D19) of this report.

CIRA Tree Valuation and Recommendations

Council will recall discussion around a tree valuation exercise completed by CIRA in mid May. CIRA completed their own inventory of street trees in the CBD. From the inventory, they undertook a valuation using a formula applied by Melbourne City Council to place an amenity value on the trees. CIRA concluded the Plane Trees planted in the CBD in the late 1990's have an amenity value in excess of $1M. The CIRA report contained various recommendations including the retrospective placement of beds and root barriers around the base of the trees.

A copy of the CIRA report has been included as Appendix 2 (D20 – D32) for the information of Council.

Arborist Comment

The opportunity was taken whilst Arborist Mark Hartley was recently in the area to re-inspect the trees and associated hardscape issues. The intent of the inspection was to enable the provision of any additional comments or recommendations. It has been over three (3) years since Mr Hartley originally provided his report recommending the staged replacement of the London Plane Trees in the CBD. Mr Hartley was also asked to comment on the tree valuation and associated recommendations provided by CIRA.

Council was provided with an updated "Tree Report" on 20 July, 2015 from Mark Hartley and Danielle Austin (Arborist who accompanied Mr Hartley when inspecting the trees on 8/7/15). Key aspects of the report included the following:

i) The problems associated with damage caused by the London Planes will continue and increase in frequency and severity as the trees age.
ii) The installation of beds around the trees would only give short-term relief and the idea only has limited application.
iii) The City of Melbourne Urban Forest Tree Valuation is not intended for the purpose for which it has been used (by CIRA).
iv) The Plane Trees are estimated to provide an annualised benefit of around $250 per tree per year.
v) Trees that are planted correctly today will outperform and have greater longevity in the urban forest than the specimens present in the current situation.
vi) The staged removal and replanting program is still considered to be the best long term solution and this should be commenced as soon as possible.

A copy of the July, 2015 Mark Hartley "Tree Report" has been included as Appendix 3 (D33 – D42).

Current Situation

Council's engineering staff and Urban Maintenance Supervisor have indicated the burden associated with damage to Council's infrastructure from Plane Tree roots is increasing. Large roots in excess of 100 mm in diameter, metres away from the base of a tree, often need to be cut to facilitate repairs (see figures 5, 6 & 7). This is consistent with the Arborist advice indicating the trees planted in the late 1990s are relatively young and as they continue to grow so too will their root upheaval zone.

Council spent $25,330 in 2014/15 and $25,099 in 2013/14 undertaking repairs to infrastructure directly damaged from Plane Tree roots in the CBD. Regularly the repairs are superficial in nature; removing trip hazards but not necessarily renewing the damaged infrastructure. It is not sustainable to replace infrastructure to only be damaged again as the tree root system continues to grow.

For example, the preferred crossing area in Byron Street near Otho Lane is being significantly impacted upon by Plane Tree roots. To counter this, Council has ground down the concrete edge beams where they have lifted and placed cold patch bitumen product to minimise trip hazards in the paved section. This is really only a 'band aid' fix and the crossing requires renewal. To give an indication of the full impact of the damage the Plane Trees in this location are contributing to, Council staff have provided an estimate of $28,648 to renew the crossing.

The scheduling of any renewal work is pending Council's decision in relation to the future management of Plane Trees in the CBD.

Figure 1 – Superficial repairs to preferred crossing area in Byron Street (near Otho Lane).

The damage caused by the Plane Trees is extensive and Figures 2 to 6 have been provided to give an indication of some of the issues currently confronting Council.

Figure 2 (corner of Byron and Lawrence Street) – Damaged brick garden, cracked kerb and the need to regularly re-lay adjoining pavers. The pavers lead to a pram ramp and crossing point.

Figure 3 – Bus Stop island in Otho Street being lifted and damaged by Plane Tree root. The island has been lifted to the extent it has dislodged the bolts fixing the grate to the adjacent kerb.

Figure 4 (corner of Byron and Vivian Street) – Cracked kerb and dislodged pavers surrounding Plane Tree. Cracked and damaged kerb adjacent to Plane Trees planted in the footpath is a common occurrence throughout the CBD

Figure 5 – Excavation for the lift well within the Byron Arcade redevelopment unearthed a Plane Tree root in excess of 100mm in diameter. The lift well is approximately 21 metres from the nearest Plane Tree.

Figure 6 – Large Plane Tree root lifting pavers in walkway at front of Coles metres away from the base of the tree. Note the tree planting in a garden bed.

Figure 7 – Close up shot of the root in figure 6 above. Note the bulbous section where the root was cut several years prior to repair similar damage. Roots need to be cut to repair damage, however the Arborists have indicated there is significant risk associated cutting roots of this size.

Whilst the major concern for Council is the damage caused to above ground infrastructure by the Plane Trees, their reach is not confined to this level. Council staff last month were just able to avert water entering commercial premises from a blocked stormwater drain. Small Plane Tree roots had entered the drain trapping the large leaves that are slow to break down causing a blockage. This is despite regular storm water drainage maintenance.

Figure 8 – Water backed up from blocked stormwater drain near the corner of Byron and Vivian Street.

Figure 9 – Small roots and Plane Tree leaves cleared from blocked drain in Figure 8.

Risk Management

The damage caused by Plane Trees invariably creates hazards in high pedestrian areas such as the CBD.

Council undertakes regular inspections in the CBD to identify potential hazards and program remedial works. These are completed on a priority basis and subject to the resources available. This is becoming an increasingly difficult task and significant strain on resources due to the amount of remedial work required.

A report to the July, 2015 Economic and Community Sustainability Committee highlighted concerns regarding footpath risk management in the CBD. The report identified an increase in the reports of trip hazards, notification of trips and falls and associated public liability claims in the CBD. The report also indicated that investigations and assessments have identified the primary cause of trip hazards within the CBD are the result of tree roots moving and lifting pavers and bitumen in parking areas.

In the five (5) years to the 30 June, 2015, there have been 21 instances of trips and falls in the CBD that have resulted in a claim or the potential for a claim to be lodged. In the 18 months to the 30 June, 2015, there were 19 customer reports of potential trip hazards in the CBD.

As a consequence, Council's insurer has placed a requirement on Council to this financial year to review its footpath inspection/management system to reduce the level of risk of trips and falls in the CBD.

Cost – Benefit Considerations

Council has recorded expenditure of $25,099 in 2013/14 and $25,330 in 2014/15 undertaking maintenance and repairs as a direct result of Plane Tree root damage in the CBD. As discussed, these repairs are often superficial in nature focusing on hazard removal and not necessarily renewing the damaged infrastructure (or resolving the underlying problem). This expenditure relates only to works in Otho Street (between Rivers and Byron) and Byron Street (between Campbell and Wood Street). In the area where the money has been expended, there are a total of 60 Plane Trees. This equates to approximately $415 per tree per annum to try to repair the hazards they create for pedestrians.

There is a general acceptance that the Plane Trees planted on the street edges in the CBD need to be professionally pruned or pollarded on a regular basis if they are to be retained. Council obtained a cost estimate in 2012 of approximately $500 per tree for this work to be completed by an Australian Qualifications Framework (AQF) level 3 Tree Worker. If this was undertaken every two (2) years to appropriately manage the scale of the trees, it would equate to a $250 per tree per annum cost.

From this exercise, it is apparent that hazard reduction maintenance and tree pruning alone would cost Council a minimum of $650 per Plane Tree per annum. Of course there are other costs associated with maintaining the trees which include litter clean up (street sweeping & cleaning furniture etc), pest and disease control (Sycamore Lace Bug is an emerging issue), risk inspections etc. These costs and the initial purchase/planting costs have not been included in the above calculations.

Council's technical staff have prepared an estimate to renew the damaged infrastructure associated with five (5) trees currently causing significant damage in the CBD. The total estimate is $58,683, which equates to approximately $11,700 for each tree (or approximately $1000 per tree when spread over the 60 trees discussed above). It should be noted that it is only feasible to undertake these renewal works if the trees were to be removed.

Whilst there will always be conjecture associated with placing a monetary value on the contribution trees make to the urban environment, the work of leading Australian experts in this field is certainly relevant.
Some of the earliest work in Australia regarding the economic value of trees in urban areas was undertaken in 2002 by Professor Randy Stringer and Phillip Killicoat from the School of Economics at the University of Adelaide. They placed a dollar value on the benefits Adelaide's street trees were considered to provide such as energy savings (cooler environment), air quality improvement (pollutant uptake), carbon dioxide reductions, stormwater runoff reductions, increased property value and related benefits and savings for reductions in repaving streets (longer bitumen or asphalt

life from cooler environment). They determined a gross annual benefit of $171 per tree. At the time the nominated cost of maintaining an Adelaide street tree was approximately $20 per annum (close to a 9:1 benefit in favour of the tree). This work was reviewed by Professor Stringer and Mark Brindal in 2009 where the annual benefit of an Adelaide Street tree was recalculated to be an estimated gross annual benefit of $424 per tree. This is not inconsistent with the work of Dr Greg Moore from the University of Melbourne as cited by Mark Hartley in his "Tree Report 2015". Dr Moore calculated the gross economic value for 100,000 large mature urban trees growing in an Australian City to be approximately $4M per annum (or $450 per tree). Based on this information Arborist Mark Hartley is of the view the London Plane trees in the Inverell CBD would provide an estimated annualised benefit of around $250 per tree.

Even if the high end reported value of annual urban tree benefit of $450 was adopted, Council is clearly spending significantly more than this to try to maintain the Plane trees in the CBD. Based on the advice regarding the trees causing more damage as they continue to grow, this deficit will continue to widen.

Obviously there will always be a cost associated with appropriately maintaining street trees and this needs to be acknowledged and appropriately budgeted for. It is the balance of that cost in relation to the benefit the tree provides that needs to be examined. Not unlike the Adelaide Street tree example above, other studies have shown there is a cost benefit ratio of 6 to 1 in favour of urban trees (a $6 benefit for every $1 spent). Given expenditure on the CBD Plane trees significantly exceeds their likely maximum economic benefit, clearly this highlights an issue of concern. Whilst the expenditure is predicted to continue to increase, this raises justifiable questions regarding the sustainability of the current plantings.

Should a tree be removed, the Town Centre Renewal Plan (TCRP) has identified replacement of that tree with a suitable alternate species (Ornamental Pear or Chinese Pistachio) for street edge planting. There is no argument the removal of a semi mature tree will make a dent in the current urban canopy. This temporary negative impact needs to be balanced against the long term benefit of appropriately planting a suitable species now for future generations. Assuming a tree purchase and planting cost of $2,000 to $2,500 per tree this is not a significant cost when spread over the likely 60 year life span of the tree.

There has been some criticism of Council for failing to bring to account or adequately recognise what have been identified as "appreciating assets" in the form of street trees. There have also been claims of initial purchase price of $4000 per tree for the Plane Trees planted during the 1990's CBD redevelopment. These matters were appropriately addressed by Council's Director Corporate and Economic Services when responding to a 'Fit for the Future' submission at the June, 2015 meeting of Council. The relevant comments from the Director Corporate Services have been reproduced below:

> *In respect of the valuation of street trees and their inclusion in Council's Asset Register as an "appreciating green asset", it should be noted that these assets cannot be included in Council's Asset Register and subsequently Council's Financial Statements. As Council is aware, and which has been confirmed by Council's Auditor, Council is restricted by the requirements placed on it by the NSW Local Government Code of Accounting Practice as specified by the Office of Local Government and the Australian Accounting Standards. Trees are not an asset class that are included in the Local Government Code of Accounting Practice and therefore the value of trees cannot be brought onto Council's Balance Sheet. Under the Australian Accounting Standards trees can only be recognised as an asset for "forestry purposes" (AASB140). To recognise an asset AASB116 is utilised under the Standard. If street trees and the trees in parks were able to be capitalised, which they are not, they could only be recognised under the Standard at either "historic cost" or "fair value". The "historic cost" of all the trees and shrubs planted in the original CBD Redevelopment in 1996 was $7,960.00. A "fair value" valuation as noted in the NSW Local Government Code of Accounting Practice is, "the price that would be received to sell an asset or transfer a liability in an orderly transaction between market participants at the measurement date. Where there is no market based evidence of fair value, councils need to estimate the fair value using the depreciated replacement cost approach. Depreciated replacement cost, is the current replacement cost less depreciation". As noted by the Auditor, if trees were able to*

be included in Council's Assets, and a tree died and was replaced with a $200.00 tree, the maximum value that could be recorded would be $200.00 which would then be depreciated. Council has also been advised by valuation specialists Australian Property Valuation – Valuation and Asset Management, who undertake the valuation of Council's Building, Parks and Reserves and other infrastructure (excluding road infrastructure), that the recognition of Assets under the Australian Accounting Standards cannot include amenity, social or other indirect financial matters. That said, Council holds an inventory of the CBD trees as tabled at previous Council meetings.

Retrospectively providing Beds around Plane Trees

Both Arborists (Hartley & Cody) have advised that the placement of beds or planting pits and barriers around the existing trees would only be a short term solution and be of little benefit. That aside, it is worthy of investigating the practical implications such a proposal would have.

Council would likely be aware that Tamworth Regional Council has been facing similar infrastructure damage and risk management issues with the London Plan Trees planted in Queen Street, Barraba. Fortunately for Tamworth Council, the trees in Barraba have not been compromised to the extent of those planted in concrete pipes in the CBD in Inverell. Nevertheless, the future of the trees in Barraba is still uncertain. Tamworth Council's Manager Parks and Horticulture Services, Mr Brian Sheedy recently indicated the trees have been monitored over the last 18 months at the request of Council. He advised that infrastructure damage and risk management issues continue to be observed. As part of the investigations conducted by Tamworth Council when considering the Plane Tree issue in Barraba, they engaged specialist consultants Insite EMLA. Insite EMLA provided Tamworth Council with an appropriate tree bed/pit and root barrier system that should be utilised should a Plane Tree be removed and replaced in a similar location with another Plane Tree. This gives an indication of the type of planting pit/vault considered necessary for a Plane Tree to appropriately grow. A plan of this planting system has been included in Appendix 4 (D43) for the information of Council.

Noting the dimensions (approximately 5m wide by 4m in depth) of the planting system as shown in Appendix 4, the retrospective placement of such around Inverell's trees would range from not feasible to a significant impost. A review of figures 2, 3 & 4 graphically show the limitations that would restrict any planting beds located in the footpath. For those trees planted in the roadway, constructing such pits would see the loss of over 40 car parking spaces in the CBD (two (2) spaces for each tree).

The Barraba Plane Trees that are in the roadway are currently in small beds (planting rings) with root barrier protection between the trees and the kerb. Mr Sheedy has indicated this has done little to combat the damage and risk management issues they are now facing. Hence Tamworth's consideration of an appropriate planting system for any future replacement plantings.

An example worth considering closer to home, is the mature Plane Trees in planting beds at the front of the Council Administration Office in Otho Street. These trees are estimated to be in excess of 50 years of age and contained in planter beds approximately 3 metres by 2 metres. A significant concrete root barrier was also installed approximately 12 years ago between the tree beds and the kerb. Despite this treatment, the tree roots have breached the barrier and have created ongoing issues with lifting pavers. It has been necessary to repair the pavers at least five (5) times around the one (1) tree in the last three (3) years. A number of Councillors witnessed the most recent repairs with large roots needing to be pruned some 9 metres away from the tree. These older trees in this section of Otho Street do not have the added complexity of being contained within a concrete pipe with spill over roots.

Technology now exists that enables the use of structural cells and semi permeable paving to provide tree planting vaults. This results in a flush finish with the surrounding surface and a great benefit when minimising the loss of parking spaces for roadway plantings. Such systems are suitable for new tree plantings.

Options

There are several options Council may wish to consider in response to this report, including:

1) Commence the staged removal and replacement of inappropriately planted London Plane Trees in the CBD as soon as practicable.

Council, at its meeting on 25 June, 2014 resolved inter alia to adopt the enhancement concepts contained in the draft Town Centre Renewal Plan (TCRP) for the purpose of guiding the future development of the town centre. The TCRP included the staged removal and replacement of the London Plane Trees.

This option is consistent with the expert advice provided to Council from two (2) well respected Arborists.

Consistent with the recommendations contained in the TCRP Council has secured over 200 advanced and super advanced trees for future planting around the town centre. These trees are being 'grown on' for Council with significant plantings proposed for Spring 2015 and Autumn 2016. These trees include 32 *Pyrus calleryanna* "Chanticleer Pear" that are 4.4 metres tall and in 300L containers (see figure 10 below). The use of ornamental pears combined with Chinese Pistachios as replacement edge plantings is consistent with the concepts contained within the TCRP.

If Council resolved to pursue this option it would be proposed to commence with five (5) trees located throughout the core CBD that are having significant impact on adjoining infrastructure.

Figure 10 – 4.4 metre Chanticleer Pears that Council has secured for future planting.

2) Undertake further investigations and or consultation prior to making a final decision.

A formal report was first presented to Council in 2008 highlighting the emerging problem associated with root damage from the Plane Trees in the CBD. Since that time expert Arborists and a Landscape Architect have examined the issue in detail and reached the same conclusion. Council has also undertaken its own investigations to determine if any other suitable options exist

to manage the Plane Trees planted in the concrete pipes. No credible alternative has been identified to date.

A more detailed cost benefit analysis could be undertaken by a suitably qualified third party. Considering the information provided in this report and the comments from Arborist Mark Hartley there would appear to be little to be gained from such an exercise. In particular, Mr Hartley stated in relation to a detailed cost benefit analysis that "*this will be of little to no benefit in this situation where the issues of the existing plantings are set to rapidly increase*".

Formal consultation with the community regarding the staged removal and replacement of the Plane Trees commenced in March, 2014 as part of the Town Centre Renewal Plan process. Since that time, there has been extensive and ongoing discussion regarding the matter, including the lobbying from CIRA. It is considered there would be very few people who wish to offer a view on the subject who have not already done so.

3) Not proceed with the tree removal and attempt to manage the associated issues into the future.

Whilst this option would receive support from those opposing the removal of the trees it would also present a range of challenges for Council.

Retrospectively trying to surround the trees with planting pits and root barriers would come at a significant cost and according to the experts provide only a short term solution at best. Further, the location of many trees in the footpath restricts what action can be undertaken to minimise conflict with infrastructure. The extent of root spread (as detailed in this report) would mean major root pruning to enable such works around the base of each tree. Arborists have also warned against such activities given the inherent risk.

Should Council proceed with this option, it would place it at odds with the recommendations contained in two (2) expert reports it commissioned. Clearly, this raises issues from a risk management perspective. It is important that Council prudently manages its risk. This is audited on a regular basis by Council's insurers. Failure to appropriately manage risk may incur a financial penalty or denial of future claims.

Conclusion

As indicated by Mark Hartley in his original "Tree Report", the removal of any tree species will often evoke an emotive response in some quarters. Clearly, where a community appreciates and values an urban forest any proposed tree removal is likely to generate significant opposition at the time. Council values the role of the urban forest and has committed to significantly enhancing this in the Town Centre in the coming years.

Council's resource management decision needs to take into consideration a wide range of factors including community sentiment. Information put forward by CIRA has been included in this report and their recommendations actively investigated.

Decisions should focus on the long term and not just the issues we currently encounter. An appropriately planted and selected species is likely to thrive in the urban environment for 60 years and beyond.

Various expert opinion has identified significant issues with the London Plane Trees in the Inverell CBD. This is reflected in the maintenance cost and risk management issues confronting Council. The current trees have also been identified as having a compromised life span.

Whilst any decision to remove a semi mature street tree is difficult, Council needs to consider if it is in the best long term interests of managing the urban forest.

RELATIONSHIP TO STRATEGIC PLAN, DELIVERY PLAN AND OPERATIONAL PLAN:

Strategy: S.05 Attractive and vibrant town centres, local centres and community meeting places are provided.

Term Achievement: S.05.01 Local centres, community facilities and prominent meeting places are increasingly valued and recognised by the community as a focus of their village and feature of the Shire.

Operational Objective: S.05.01.01 Engage the Shire's communities in identifying and creating community places that are valued and used.

POLICY IMPLICATIONS:

Nil.

CHIEF FINANCIAL OFFICERS COMMENT:

Nil.

LEGAL IMPLICATIONS:

Nil.

RECOMMENDATION:

A matter for Council.

APPENDIX 1

ROY'S TREE SERVICE
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e-mail: roystree@bigpond.com **WEB:** www.roystree.com
Roy Cody Pty Ltd ATF Roy Cody Family Trust

Consulting Arborist:
Roy Cody B.Sc., Dip. Ed.
ISA Certified Arborist # WC3670
ISA Certified Tree Worker # 834

Mr Brett McInnes
Director Civil & Environmental Services
Inverell Shire Council
PO Box 138 Inverell NSW 2360
Dear Brett
Thank you for the opportunity to Peer review the report by Mark Hartley written in 2012.
.....

Firstly, my qualifications for writing this report:
I am a Consulting Arborist with International Certificates awarded to me as a result of both theory and practical examinations successfully passed in San Francisco on 14/6/1997.
I was the second in NSW, third in Australia to become an "ISA Certified Arborist" and still, I believe the only Australian to hold the "Certified Tree Worker Certificate". I was the first and probably the only one in the world to gain both these certificates on the same day!

I passed the Certified Arborist exam in USA in 1997 under Northern hemisphere ideology... where the Southern side of the house is the SUNNY side and the Northern side the SHADY side. The exam was brought to Australia in the year 2000 and modified for the Southern Hemisphere. In the year 2000, in Canberra, it was offered to 25 of our BEST TRAINED Arborists in Australia... Trained by Burnley College at University of Melbourne, NSW TAFE or Qld TAFE and NOT ONE of the 25 candidates PASSED the exam. I do not hold an AQS5 certificate but with this accomplishment and 26 years as a practising and Consulting Arborist I am confident that I am way above the basic "Diploma of Horticulture level". I passed the exam with 80% where 70% is the PASS Mark and you must score at least 60% in each of the 10 different lobes to gain a pass. This exam is administered by ISA (International Society of Arboriculture), a World non-profit organisation committed to the improvement of trees, tree work, research and education about trees. Also, in California there are 273 trees on the species list. They laid out 10 samples of foliage and I HAD to score 6 out of 10 or I failed the exam!

In 1997, while on a working trip lasting 7 months to USA I attended a total of 9 seminars. I attended two separate **Tree appraisal seminars**, The first at the University of California in San Diego on 22 and 23 August 1997, (where I was an Invited Guest Speaker), and at Anaheim, California on September, 19th 1997, where the whole day was on TREE APPRAISAL ..... or to be more explicit.... **Calculating a Dollar Value of a tree depending on its Species, Location, Size, Condition, Trunk Diameter, Expected future life, Risk of failure, Fungus and /or Insect damage etc... etc.**

During that 7 months in USA, I worked with some of the most prominent Arborists in USA, some of whom had travelled to Britain to teach the English Arborists some of their rigging techniques and demonstrate special equipment.

In 2004, as a result of my submissions and by presenting reports that I had written, I was recommended as a Consulting Arborist by the NAAA (National Arborists Association of Australia). At that time, I was the only person they recommended outside the Sydney area. NAAA has since changed its name to Arboriculture Australia.

I offer the above as justification for being able to write your report.

.....

PURPOSE OF THE REPORT:

To Peer review the previous Arborist report, Inspect the trees in the two main streets of Inverell and make recommendations concerning the long term management of the London Plane trees.

REPORT:

Firstly Mark Hartley is possibly the most knowledgeable and experienced Arborist in Australia. He has worked on several continents and is held in high regard on the international arena.

On 22/7/15 I travelled to Inverell and examined the trees in Ortho and Byron Streets.

The Plane trees, *Platanus x hybrida*, that were planted in 1200mm pipes, 900mm diameter have all had roots "escape" over the top of the pipes and have caused various degrees of damage to hardscape such as lifting kerbs, concrete edging, broken brick garden surrounds as well as lots of lifting of pavers which causes significant trippage problems if they are not lifted and reset. I could see where Council has had to lift the pavers and reset them at a higher level or on an increased slope to allow for the tree's lifting of hardscapes. The tree roots have come to the surface to escape the root restriction of the concrete pipes and they have found the aggregate or grit base for the pavers a very easy structure to penetrate and are going there looking for water that has come down through the cracks in the pavers. It is not surprising therefore that as soon as the pavers are lifted and these roots cut that the tree reacts by sending new roots looking for the moisture supply that has just been cut off. Each time the roots are cut it is an invitation for armillaria root rot to enter the wound and cause serious root damage that could cause the tree to fall over onto persons or vehicles in the street.

In Tamworth some ill advised council workers attacked the roots of several trees with an axe and trimmed them back from the steel grates instead of trimming a ring or two off the steel grate. The root rot in now well established in these trees which will cut short their life and add a risk of failure and injury to the public and property. See photo below.

A suggestion has been made about installing planter boxes or garden beds around the trees. This would only be a short term solution as the tree roots will still lift these barriers and escape into the paved areas underneath the barriers. You have the added problem that these garden beds will take up parking spaces in the streets which would be unpopular with shop owners as well as shoppers seeking a park in busy times. These planter boxes, if used at all, should only be placed around trees that have not already caused damage and would still only be a costly short term solution.

One of the conferences I attended in USA was specifically on the Evaluation of Street Trees. Unfortunately because of the method of planting these trees in too small of a restricting pipe it has seriously reduced the life expectancy of the trees. This causes a significant devaluation of the city's tree asset because of their reduced life expectancy as well as the cost of maintenance and repairs to the hardscape. The restricting of the roots in the pipe and the trimming of the surface roots also makes the stability of the tree questionable and could allow it to blow out of the ground in a strong wind.

I have closely examined the April 2012 Tree Report written by Mark Hartley and could not disagree with any of the statements and advice given.

CONCLUSION AND RECOMMENDATIONS:
Having studied the report by Mark Hartley, my own inspection of the trees as well as examining your photographs of past infrastructure repairs, I believe that the trees will need to be removed in the near future. This could be done in a staged programme of removing the ones doing the greatest damage first and replacing them over a period of time to soften the impact of the loss of asset. Due to the method of planting in restrictive pipes the tree asset has become a liability due to the ongoing costs of repairs to the infrastructure.
I believe the best long term solution is the staged removal and replacement (with suitable species) of the London Plane trees in the Inverell CBD.

Yours faithfully

RJCody

Roy Cody 28/7/2015

APPENDIX 2

Plane Trees – Inverell Tree Inventory – 18/5/2015

EXECUTIVE SUMMARY

The ISC has an appreciating green asset in Otho and Byron Street of $2 million.

A part of that asset is made up of the plane trees that were planted after 1998 (17 years). They are worth over $1 million dollars.

Their average value is over $20,000.

They have appreciated in value 24% since that were planted at an original cost of $4,000.

The fifty 17 year old plane trees have appreciated at a combined total of approximately $240,000 over 2014/2015.

The deduction of the $60,000 ISC annual tree maintenance cost still leaves $180,000 appreciation residual.

Note that appreciation does not take into consideration the appreciation of the older historical amenity Plane Trees in Otho St from Evans Street to Henderson St.

In other words, the ISC has an appreciating asset worth over $1,000,000 that will appreciate by $240,000 this financial year 2014-2015 and it costs $60,000 to maintain them. On those figures alone the plane trees are a very sound investment both now and for future generations of Inverell Shire Citizens.

What is concerning is Inverell Shire Council is planning to remove trees from the CBD without explaining to ratepayers the real financial value the trees have.

Trees similar to other Council assets such as roads, buildings and plant are a valuable asset with many having an initial purchase price of $4,000 each but importantly also has an appreciated value that has a recognized process for calculation. The Council is planning to remove an asset worth in excess of $1 million dollars and cart it to the tip as rubbish.

It is concerning that the Council's Balance sheets (the accounting method) used to value all Councils assets such as buildings, roads and plant, does not include the value of environmental assets such as trees by using a baseline initial purchase price which in many cases is four thousand dollars per tree, but also calculating the value as they grow using an internationally recognized method as engaged by

council such as Melbourne city council. Inverell shire council, by not adopting this methodology, must explain to ratepayer's why they are destroying as much as 1 million dollars of ratepayers assets.

CIRA has compiled this Inventory using an internationally recognized methodology of the tree values and their condition in the CBD of Inverell as a result of the TCRP Town Centre Renewal Plan passed by the ISC in 2014.

What has become apparent is the lack of a broad range on information upon which the community can make informed and up-to-date decisions.

Such an unfortunate oversight has resulted in decisions being made that do not effectively consider the long-term implications of the Inverell Shire's asset accumulation or divestment or the impact of such on Local, State and Federal economic, social and environmental programs and targets.
Moreover, decisions must be made that are based upon the best economic and scientific information available so future planning and maintenance can be based on World's Best Practice, thereby avoiding costly, well-intentioned but misguided and irreversible mistakes.

One only has to look how many local councils lost millions of dollars invested in the share market a few years ago. What seemed a good idea was really based on limited information arising from a "fad" driven market.

It is essential that this doesn't continue and that people don't make assumptions about a thing's value based on what was and not what is. The only way to avoid that is to constantly update and review information from a wide range of peer-reviewed sources.

This Tree Inventory is based on advice from arborists implementing internationally recognized and peer-reviewed procedures. The table of valuations used to determine the value of the trees in Inverell's Otho Street and Byron Street is based on the internationally accepted table of values devised by the American Council of Tree and Landscape Appraiser and the international Society of Arboriculture. The values are based on 2013 values so to have 2015 values one can simply factor in the CPI increases of the last two years.

This inventory has been conducted because of the apparent absence of one being conducted by the ISC that;
1. Establishes the amenity value of the trees
2. Reviews maintenance procedures and said costs based on World's Best Practice
3. Establishes a timetable of Best Practice maintenance and establishes a tree priority list of those most in need of maintenance.

This Inventory has not been conducted by a professional arborist but has been developed after consultation with professional arborists and close and detailed application of the values and formulas used across Australia and internationally.

The Formula and Valuation tables are freely available to anybody interested in doing the valuations for themselves. In fact we at CIRA would encourage people to get a tape measure and the formula tables and do some measuring.

EXPLANATION OF HOW THE FORMULAS WERE APPLIED.

We used the formulas set out in the Urban Forest Tree Valuations used by the Melbourne City Council. This Document can be found on the Melbourne City Council Web Site as can the detailed 2013/14 FY DBH base values used when applying the formulas.
These are ACTLA values that are broadly applied to different regions and countries.

Applying the Formula

The CBD definition was applied to Otho Street where River Street crosses it to Mansfield Street which means that part of the formula applies the value of 2.5.
Otho Street from Henderson Street to River Street and Byron Street from Mansfield Street to Wood Street was designated as "Significant Street near CBD centre" which means that a lesser value of 2 is applied to the tree formula. It is interesting to note that the original CBD plan designates the CBD as being from Henderson Street to Wood Street however it was decided to apply the tree values in a conservative manner.

The Formula is made up of the following;

A base value of the tree is determined by measuring the diameter of the tree chest height (1.4 metres) up the trunk. If the tree starts to branch before 1.4 metres then the diameter of the branches, at that height is calculated and are added together to get a total.

Taking the base value, a Species Factor is applied based on the natural life span of the tree. In the case of Plane Trees and Pistachios, the factor is 0.9 as they live more than 150 years and are fast growers.

Then an Aesthetics Factor is applied. In this case as the trees are Street or Pathway plantings the factor is 0.9

A Locality Factor is then applied. As the trees from River Street to Mansfield are in the City Centre the factor is 2.5. In the case of the trees in Otho Street from Henderson Street to River Street and in Byron Street from Mansfield Street to Wood Street the Factor of 2 was applied as it was determined that they were in a significant street near the City Centre.

Finally a Tree Condition Factor was applied. Each tree was given a score based on 6 criteria (Trunk, growth, structure, pests and diseases, canopy development and life expectancy).

In the case of the trees planted 15 years ago their Factor rating was 1.0 whereas the older trees from Evans Street to Campbell Street have been pollarded and have canopies that are not full or balanced. Therefore a Factor of 0.8 was applied to them.

Individual trees such as the Plane Tree outside the 4 x 4 shop in Byron Street were heavily penalized due to ill health and trunk damage having, factors as low as 0.2 and 0.4 applied.

The Kurrajong Tree, across the street from the Royal Hotel, was also effected by its unbalanced canopy, being hollow etc.

The trees in the roundabout coming off the bridge into Byron Street were valued but not counted in the total for Byron and Otho Streets. Neither were the six trees next to "The Byron Reconstruction in Evans Street, although they were valued. These tree were note included in the total as the ISC TCRP plan has not mentioned them for removal and the Mayor, in correspondence, has noted that the 6 trees in Evans Street opposite "The Byron Refurbishment", will not be removed. If the 9 trees were counted they would add over $500,000 to the total as they are "Significant Amenity Trees, six of which have historical importance due to their age and the 3 trees in the Campbell/Byron Street roundabout having significant aesthetic significance.

Inverell Value Tree Inventory – May 2015

Total Value of Otho and Byron Street Trees
69 Plane Trees - $2,008,846 –(Number of Plane Trees 17 years or less = 50 = Value $1,024,370)
48 Pistachios - $488,538

DOWN OTHO ST

27 Plane Trees – Total Value: $1,142,169
10 Pistachio Trees – Total Value: $72,270
6 Evans St Median Strip Plane Trees – Total Value: $408,982(not counted in Byron and Otho St total)

----------Byron St----------

			Formula: Ax.9x.9x2.5x1
Surf and Fashion	Plane Tree – 26cm - **$12,113**	Plane Tree – 32cm - **$18,350**	Syretts
Raised Crossing	Plane Tree – 35cm - **$21,953**	Plane Tree – 33cm - **$19,514**	Raised Crossing
Inv. Motel		Plane Tree – 31cm - **$17,220**	Raised Crossing
Pathology	Plane Tree – 29cm - **$16,746**	Plane Tree – 30cm - **$16,127**	Adriennes Body Shop
	Plane tree – 35cm - **$21,953**	Plane Tree – 31cm - **$17,220**	
	Pistachio Tree – 25cm - **$11,200**		Total = Plane Trees $183,149
	Plane Tree – 35cm - **$21,953**	Pistachio Tree – 17cm - **$5,177**	Pistachios $16,377

----------Evans St----------

	Plane Tree – 51cm - **$37,289**	Pistachio Tree – 24cm - **$10,321**	Formula – A x .9 x .9 x 2.5 x .8
	Pistachio Tree – 15cm - **$4,031**	Plane Tree – 59cm - **$49,905**	
	Pistachio Tree – 37cm - **$24,532**	Plane Tree – 27cm - **$10,450**	
Police Station	Plane Tree – 82cm - **$96,401**		
Court House	Plane Tree – 78cm - **$87,225**	Plane Tree – 61cm - **$53,346**	

Govt Offices Heavily Pruned	Plane Tree – 59cm - **$62,382** Plane Tree – 76cm - **$82,809** Plane Tree – 60cm - **$51,611**	Plane Tree – 67cm - **$64,357** Pistachio Tree? – 53cm - **$6,090**	Inverell Shire Council Total = Plane Trees $595,775 Pistachios $44,974

----------River St----------

	Pistachio Tree – 13cm - **$2,421** Pistachio Tree – 13cm - **$2,421** Plane Tree – 64cm - **$46,978**	Pistachio Tree – 18cm - **$4,644** Pistachio Tree – 10cm - **$1,433** Plane Tree – 75cm - **$64,516**	Total = Plane trees $363,245 Pistachios $10,919
Regional Finance Crowe Howarth	Plane Tree – 52cm - **$31,013** Plane Tree – 49cm - **$27,537** Plane Tree – 59cm - **$39,924**	Plane Tree – 92cm - **$97,078** Plane Tree – 70cm - **$56,199**	Ambulance Station Old Service Station Site

----------Henderson St----------

EVANS ST (Opposite "The Byron" Rebuild)

Evans St Median Strip (Not counted it the Otho St Total)

Plane Tree – 69cm - **$68,257**
Plane Tree – 71cm - **$72,271**
Plane Tree – 76cm - **$82,809**
Plane Tree – 76cm - **$82,809**
Plane Tree – 33cm - **$15,611**
Plane Tree – 78cm - **$87,225**
Total = ($408,982)

Inverell Tree Inventory – May 2015

Formula: Ax.9x.9x2x1

DOWN BYRON ST

42 Plane Trees – Total Value: $866,677

38 Pistachio Trees – Total Value: $416,268

3 Roundabout Plane Trees – Total Value: $152,169

Campbell St Byron St Roundabout – (Not counted in Byron Street total)

Plane Tree - 38cm - **$31,617**
Plane Tree – 58cm - **$60,286**
Plane Tree – 58cm - **$60,286**

----------Campbell St----------

	Pistachio Tree – 38cm - **$25,877**	Pistachio Tree – 24cm - **$10,321**	Formula =A x .9 x .9 x 2.5 x1
	Pistachio Tree – 25cm - **$11,200**	Pistachio Tree – 22cm - **$9,280**	
Lane Way		Pistachio Tree – 25cm - **$11,200**	Coles
		Pistachio Tree – 27cm - **$13,063**	
		Plane Tree – 35cm - **$21,953**	
	Plane Tree – 35cm - **$21,953**	Plane Tree – 26cm - **$12,113**	
		Plane Tree – 43cm - **$33,135**	Raised Crossing
Raised Crossing	Plane Tree – 39cm - **$27,256**	Plane Tree – 35cm - **$21,953**	Raised Crossing
	Plane Tree – 30cm - **$16,127**		

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Bridge Cafe	Pistachio Tree – 22cm - **$8,673** Pistachio Tree – 29cm - **$15,070** Plane Tree – 36cm - **$23,224**		Dust Jacket
---------- Otho St----------	----------Otho St Roundabout ----------	T- Intersection with Byron St----------	
The Imperial	Plane Tree – 39cm - **$27,256** Pistachio Tree – 31cm - **$17,220** Pistachio Tree – 34cm - **$20,715** Plane Tree – 37cm - **$24,532**	Plane Tree – 35cm - **$21,953** Pistachio Tree – 31cm - **$17,220** Pistachio Tree – 25cm - **$11,200** Pistachio Tree – 29cm - **$15,070** Plane Tree – 41cm - **$30,123**	Me and Mr Jones
Lane Way		Plane Tree – 36cm - **$23,224**	Premier Store
Raised Crossing	Plane Tree – 35cm - **$21,953**	Plane Tree – 43cm - **$33,135**	Raised Crossing
Raised Crossing	Plane Tree – 35cm - **$21,953**		
	Plane Tree – 35cm - **$21,953** Pistachio Tree – 21cm - **$7,901** Pistachio Tree – 25cm - **$11,200** Plane Tree – 25cm - **$11,200**	Plane Tree – 42cm - **$31,612** Pistachio Tree – 27cm - **$13,063** Pistachio Tree – 30cm - **$16,127**	Total=Plane Trees $446,608 Pistachios $225,111
----------Vivian St ----------	----------Vivian St Byron St Roundabout ----------	Vivian St Taxi Rank ----------	

Australian Hotel	Plane Tree – 35cm - **$21,953** Pistachio Tree – 23cm - **$9,479** Pistachio Tree – 24cm - **$10,321** Plane Tree – 38cm - **$25,877**	Pistachio Tree – 22cm - **$8,470** Pistachio Tree – 36cm - **$23,224** Plane Tree – 32cm - **$18,350** Plane Tree – 39cm - **$27,256**	Formula = A x .9 x.9 x2.5 x1 Freckles
Raised Crossing Raised Crossing Raised Crossing	Plane Tree – 24cm - **$10,321** Plane Tree – 43cm - **$33,135** Plane Tree – 35cm - **$21,953**	Plane Tree – 52cm - **$48,458**	Raised Crossing
	Plane Tree – 25cm - **$11,200**	Plane Tree – 18cm - **$5,805**	Furniture Court
	Pistachio Tree – 11cm -**$2,166** Pistachio Tree – 24cm - **$10,321** Plane Tree – 36cm - **$23,224**	Pistachio Tree – 32cm - **$18,350** Pistachio Tree – 25cm - **$11,200** Pistachio Tree – 24cm - **$10,321** Pistachio Tree – 24cm - **$10,321**	Cinema Total=Plane Trees $247,532 Pistachios $114,173

----------Laurence St---------- Laurence St – Byron Street Roundabout ---------- Laurence St----------

Liquid Amber 30cm – **$16,127**

Thai Restaurant	Pistachio Tree – 25cm - **$11,200** Pistachio Tree – 25cm - **$11,200** Plane Tree – 39cm - **$27,256**	Pistachio Tree – 20cm - **$7,166** Pistachio Tree – 16cm - **$4586** Plane Tree – 22cm - **$8,673** Plane Tree – 25cm - **$11,200**	Formula = A x.9 x.9 x2.5 x1

Raised Crossing 2NZ Toyota	Plane Tree – 31cm – **$17,220** Plane Tree – 25cm - **$11,200** Plane Tree – 20cm - **$8,759** Pistachio Tree – 29cm - **$15,070**	Plane tree – 29cm - **$15070** Plane Tree – 32cm - **$18,350** Pistachio Tree – 28cm - **$14,049**	Raised Crossing McDonalds Tradelink Total=Plane Trees $117,728 Pistachios $46,908

----------Mansfield St---------- Mansfield St Byron St Roundabout ---------- Mansfield St ----------

Subaru Ford Byron Spares	Pistachio Tree – 22cm - **$6.983** Pistachio Tree – 26cm - **$9,690** Pistachio Tree – 27cm - **$10,450** Pistachio Tree – 13cm - **$2,421** Kurrajong Tree – 63cm - **$26,554** Manchurian Pear Tree – 4cm - **$50**	Plane Tree- 36cm **-$18,579** Plane Tree – 30cm - **$12,464** Plane Tree – 37cm - **$19,626** Plane Tree – 37cm - **$4,140** (sick) Manchurian Pear Tree – 3cm - **$50**	Formula = A x.9 x.9 x2 x1 KFC Shabu Print Anything 4 x 4 Total Plane Trees $54,809 Pistachios $29,544

----------Wood St---------- Wood St Byron St Roundabout ---------- Wood St ----------

Lawence and Hanson	Manchurian Pear Tree – 4cm - $50 Manchurian pear Tree – 4cm - $50	Manchurian Pear Tree – 4cm - $50 Manchurian Pear Tree – 4cm $50 Manchurian Pear Tree – 4cm $50	Dalgety

CONDITION OF TREES

In the process of valuing the trees their condition was assessed.
The majority are in good health with the exception of a couple.

The healthiest are the trees that are in beds that allow their base skirts to develop around the trunks as they need to have access to the atmosphere in this area. The trees in the Coles raised crossing are an example of this.

The plane tree is a shallow-rooted tree and a surface feeder, the roots of which can be managed by root barriers to a depth of 1.5 metres and beds that allow the uptake of nutrients as is successfully being applied by other councils such as Sydney and Melbourne.

It was apparent that trees that had bitumen right up to the trunk or have had beds removed to allow closer parking are struggling more than those in beds that are allowed to breath and uptake nutrients easily.

It was interesting to note that the older trees in Otho Street that were allowed to develop a skirt at the trunk base were happier and did not distort road surfaces as significantly as those trees that had to search for nutrient or struggle against the bitumen.

What is clear is that there has been a problem with the application of the right forms of maintenance to many of the trees, (especially the Plane Trees) which may have resulted in waste of maintenance resources. Best Practice procedures and techniques will go a long way to stemming the maintenance costs. Properly applied root barriers and beds reduced much of the problem based on the experience of other cities that have applied them. These city councils are generous with their time and advice.

What is clear from those urban and regional councils who have seen the benefits of accepting that their urban forests are a very valuable and appreciating "Green Asset" that need to be included in any asset audit along with other "Grey Assets", is that the economic benefits are substantial and are not in conflict with the environmental and social benefits and in fact, combine to have a substantial multiplier effect.

To quote from the Melbourne City Council Tree policy;

"Size Matters
A strategically located large-statue tree has a bigger impact on conserving energy and mitigating the urban heat island effect than a corresponding quantity of smaller trees. Larger trees do more to:
1. Reduce storm water run-off.
2. Extend the life of street surfaces.
3. Improve local air, soil and water quality.
4. Reduce atmospheric carbon dioxide.
5. Increase property values.
6. Enhance the attractiveness of an area.
7. Promote human health and wellbeing.

The bigger the tree, the larger the benefits and, ultimately the better the community's quality of life."

What The Tree Values Show

The **69** Plane Trees have a value of **$2,008,846**

The **50** trees planted 17 years ago have a value of **$1,024,370** (approx.. value per tree = **$20,000**)

When planted they cost **$4,000** each with a total cost of **$200,000**

The value of the trees has increased at approx. **24%** each year.

The **19** older trees in **Otho Street** have appreciated at a similar rate but for longer.

If annual maintenance cost **$60,000 pa** then it is easily covered by the appreciating value of the trees alone.

Common sense decisions have to be made after balancing the appreciating Green assets against the maintenance of the depreciating grey assets. For example the linear metre cost of replacing kerbing and guttering is **$75**. The ISC has its own kerbing and guttering machine.

Recommendations

- **That the ISC recognizes that the removal of the Plane Trees from Byron and Otho Street is a retrograde step that will waste potentially $2 million of appreciating assets.**
-
- **That a full tree inventory of Inverell trees be conducted, that includes values, tree condition, and long term strategic maintenance and budget plan so any decisions can be based on the most up to date facts, figures and best practice procedures and protocols.**
- **That the current maintenance program for the trees be reviewed and adopt "Best Practice Methods".**
- **That those trees that have bitumen up to their trunks have it removed and beds established and/or replaced where they appear to have been removed as is the case in Byron Street where a number of the trees are in the road and not the footpath.**
- **As the plane Tree is a shallow rooted tree that needs a surface root skirt to form at the base of the trunk and for its nutrient requirements to be delivered in the top 30 cm of soil depth that beds be established that incorporate root barriers to a depth of 1.5 metres based on a linear metre cost of $25 plus the cost of a trenching machine or back-hoe with a 300mm bucket. Note the $25 linear metre cost includes the root barrier and the Sodium Bentonite fixer.**

NB. This tree inventory is not complete, in that it does not list all the amenity trees within the Inverell streets outside the CBD. This will continue to be an ongoing growing document that will identify and value all amenity trees and overall urban forest.
In reality this really is something the ISC should be doing.
We at CIRA hope many people will start going out and measuring and valuing their own trees so they can see for themselves what valuable assets they have in their own town.

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APPENDIX 3

Tree Report

Site Address: Inverell NSW 2360

Prepared For: Brett McInnes
Inverell Council
PO Box 138
Inverell NSW 2360

Prepared On: 20th July 2015

Report Number: CD1108

Prepared By: **Danielle Austin**
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Table of Contents

Copyright Release

Brief

The authors have been asked to:

- Visit various sites throughout the City Centre and examine multiple trees, hardscape issues and maintenance issues.
- Review community feedback
- Provide additional recommendations and comments.

Background

There has been a general absence of an overall Tree Management Plan for the town of Inverell. Planting, while in the main has been successful it has not been without problems.

- Large trees have been planted under wires.
- Planting, maintenance and cultural practices have resulted in the longer term complications.
- Trees have caused damage to the infrastructure, and on occasions, that damage has been quite extensive.

Trees in the main streets (Otho Street and Byron Street) were planted in two stages over the last few decades. Planting in the main street included the use of a 1200mm long by 900mm diameter pipe as a form of a root barricade.

The London Plane trees in the main street were lopped several years ago primarily to address problems associated with leaf drop and box gutters. In addition lopping was also undertaken to control growth, including slowing root growth.

An initial arborist report prepared by the Arborist Network was prepared on 23rd April 2012. This report should be read in conjunction with the earlier report.

Method

A site inspection took place on the 8th July 2015. An array of trees was inspected throughout the City Centre of Inverell. The trees that were inspected included *Platanus X hybrida* (London Planes) and *Pistacia chinensis*

A Stage 1 Visual Tree Assessment (VTA)[1] was undertaken of a number of the trees.

Multiple hardscape sites were inspected. This included works that have been undertaken such as the removal of existing pavers, reinstallation of subgrade material and relaying of pavers.

Photographs were taken at various sites to:

- detail hardscape issues, and
- record specific tree characteristics, and
- provide suitable benchmarks for comparisons.

Images of hardscape issues and specific tree characteristics, provided by Inverell Shire Council were examined.

Information Provided

The Plane Trees –Inverell Tree Inventory – 18/05/2015. The Inventory was undertaken by the Concerned Inverell's Ratepayer's Association and provided to Inverell Shire Council. The inventory outlines the valuation of Inverell trees assets utilizing the City of Melbourne, Urban Forest Tree Valuation.

Limits

The report is not intended to be a detailed account and assessment of the issues associated with individual trees, individual hardscape issues or the valuation of individual trees or the entire urban forest.

This report must be read in conjunction with the initial report prepared by the Arborist Network dated 23rd April 2012 and be understood to be an adjunct to this earlier report.

[1] **VTA** – Visual Tree Assessment, as referenced below, is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. The first stage of this assessment is made from ground level and no aerial inspection is undertaken unless there are visual indicators to suggest that this is merited. Details of the visual indicators are contained in *The Body Language of Trees* by Mattheck & Breloer (1994). The use of a Visual Tree Assessment is widely used and standardised approach. Invasive and other diagnostic fault detection procedures will generally only be recommended when visual indicators of potential concern are observed.

[1] **Mattheck, C & Breloer, H** 1994 *Field guide for visual tree assessment (VTA),* Arboriculture Journal 18:1-23

Observations

There are multiple trees planted within the commercial City Centre and adjacent areas of Inverell. The two dominant species that have been utilized are *Platanus x hybrida* and *Pistachio chinensis*. They have an estimated age ranging between 14 – 18years.

The trees have been planted within confined spaces on the sidewalk area in front of the commercial buildings and within the roadway between designated vehicular carparks.

Roots from many of the *Platanus x hybrida* have caused minor to extensive infrastructure damage including damage to:

- the adjacent kerbs, and
- adjacent pavers, and
- raised garden beds.

Remedial work has been undertaken on adjacent kerbs and extensive work has been recently been undertaken in lifting pavers, cutting surface roots and resetting the pavers.

Roots from the *Pistachio chinensis* appear to not have the same impact on the surrounding infrastructure. Minor displacement of individual pavers and lifting of tree grates were observed. A number of tree grates had been imbedded into the base of the trees.

Discussion

Garden Management and Maintenance

Trees planted within an urban forest need to take into consideration the requirements of the tree, their establishment, environmental conditions and ongoing maintenance. The negative impacts that can result from trees being planted in confined spaces needs to be considered including potential damage to the trees, infrastructure and economy.

There is a clear and distinct competition for physical space between the roots of the *Platanus x hybrida* and the surrounding infrastructure. The problems associated with damage caused by the London Planes will continue and increase in frequency and severity as the trees age.

A suggestion has been proffered by a community group. The proposal involves the removal of pavers to provide more space or the installation of a garden in order to address the issues caused by roots of the Plane trees.

It should be noted that, the trees are only young specimens and will continue to grow. Even with the implementation of this suggestion, it will only be a matter of several years before roots that are further out cause similar damage to the surrounding rigid surfaces. As a result, this would only give short-term relief resulting in the same issues occurring several years down the line. As such the idea offers only an interim solution that has a limited application.

The construction of garden beds is really best implemented around trees:

- that are not slated for removal in the next few years, and
- located in a paved area suitably distant from other hard surfaces, and
- that are not already causing damage to hard surfaces other than the pavers, and
- where the pavers need to be lifted and reset to reduce trip hazards.

This solution must be weighed carefully and is unlikely to be suitable for many of the trees. Where it is more cost effective to lift the pavers and install a garden bed rather than doing repairs over several years, where adequate space exists and where the trees are likely to be retained for 3 to 5 years before they are replaced then this may be an appropriate interim solution.

The loss of footpath area, loss of car parks and alteration of infrastructure also needs also to be appropriately weighed. These restrictions, maintenance and infrastructure costs will result in an impact on the use and usability of the surrounding area.

It is not known what impact planting the trees into pipes and the presence of the hardstand beneath the pavers has had on the root morphology of the trees. Therefore, should the decision be made to install interim garden beds, due diligence and care needs to be taken when root pruning is being performed.

The subgrade material that was originally laid to provide stability to the pavers needs to be taken into consideration. This compacted subgrade has the potential to keep roots close to the surface. The hard surface may also result in roots coalescing on or near the surface creating ongoing maintenance and stability concerns. (Trees in the median planting in Evans Street, in part, demonstrate this issue.)

Post benefit analysis

There are some concerns when utilizing The City of Melbourne Urban Forest Tree Valuation when undertaking a cost benefit analysis of these trees. The method is designed to set a valuation for trees that need to be removed in order to allow development to occur. It is not intended for the purpose for which it has been used.

That said, the economic contribution of trees to the urban environment is able to be quantified and a cost benefit analysis of trees should be taken into consideration when making decisions such as the removal of the trees. In doing so any analysis should consider the costs of maintaining the trees as well as the benefits provided by replacement trees.

The residents do not appear to take into consideration that there are costs associated with maintenance and repair of the infrastructure damaged by the trees. These maintenance costs are only going to increase as the trees continue to get older and the roots get larger. It also fails to consider that because of the uncertainty associated with the root morphology, there is a high likelihood that the trees will need to be removed at some stage in the near future.

In undertaking a thorough cost benefit analysis the benefits of all options need to be weighed against the projected costs of each option. In addition, the life expectancy of each option also needs to be considered. Whilst there will be a loss associated with the removal of the existing trees there will be a sizable reduction in the maintenance costs. In addition, the increasing value of any replacement tree and the longevity of these plantings also need to be considered.

There is a significant proportion of the city centre canopy that is comprised of *Platanus x hybrida.* These trees are comparatively young specimens. Their removal at this stage of their life, whilst regrettable, will be much less significant than it would be when there is no other option but to remove the trees in a number of years' time.

As a result, the quicker these new trees can become established and provide a similar amenity to the area expeditious, the greater the benefits and the less the losses will be.

Trees that are planted correctly today will outperform and have greater longevity in the urban forest than the specimens present in the current situation. Whilst the removal of the existing trees will result in a temporary reduction in the canopy within the urban environment, this reduction will be a short term loss with significant long term benefits. A timely replacement and management program is critical and vital in maintaining canopy coverage.

All trees provide some value, and it is difficult to put an indisputable figure on factors such as visual amenity. However, trees do provide benefits that can be assessed empirically. Moore (2009)[2] suggests 100,000 "large mature urban trees growing in an Australian city" can provide an annualised benefit of over $45,000,000 or an annualised benefit of more than $450 a tree. These trees are not large and a more realistic estimation is likely to be around $250 per tree per year.

It seems likely that substantially more than this is already being spent each year on maintaining just the root problems associated with many of these trees, ignoring cost of damage that is still to be repaired. As the trees increase in size the problems with the roots will only increase.

[2] **Moore G** 2009, *Urban Trees: Worth More Than They Cost*, Treenet Day 1 Session 3

Recommendations and conclusions

1. A staged removal and replanting program is still considered to be the best solution in this situation. To minimise the impact, this should be commenced as soon as possible.

2. There may be a limited application for garden beds around several of the trees as an interim solution where this is deemed to be cost effective given all the considerations. Some generalised specifications have been included below. This is not considered to be a suitable short term solution for most of the Plane trees and is not a solution that will address the issues of past planting issues or design issues associated with the Plane trees.

3. If a detailed cost benefit analysis is required it is recommended that the method outlined in Stewart, O'Callaghan and Hartley (2013)[3] should be followed. It is suggested, however, that this will be of little to no benefit in this situation where the issues of the existing plantings are set to rapidly increase.

4. Any valuation needs to take into consideration not only the loss of the existing trees but also the increasing costs of maintenance. This needs to be weighed against he much greater landscape functionality of the new planting combined with their increasing value and greatly reduced maintenance costs.

5. There are multiple challenges and issues that need to be taken into consideration when managing an urban forest. The concerns and issues of community expectations have been expressed and weighed by the authors.

6. The Plane Trees –Inverell Tree Inventory – 18/05/2015, that was undertaken by the Concerned Inverell's Ratepayer's Association has not considered the projected ongoing maintenance costs, infrastructure damage and the associated liability issues, or the inevitability of the need to remove a number of the trees in the short-term future (10 – 20 years due to instability issues).

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[3] **Stewart, MG, O'Callaghan, D & Hartley, M** 2013, *Review of QTRA and Risk-based Cost-benefit Assessment of Tree Management.* **Arboriculture & Urban Forestry**, vol. 39, no. 4, pp.165–172 International Society of Arboriculture Champaign, Illinois

Garden specifications

Where a decision is made to install one or more garden beds as an interim solution the following specifications may be a suitable starting point.

Installation of the garden bed needs to take into consideration:

- Protection of the existing tree
- Level changes – excavation and due diligence and care needs to be taken when root pruning
- Potential compaction and importation of subgrade material to prevent the potential of coalescing surface roots.
- If extensive root pruning is required, the trees removal and replacement with a more suitable species needs to be considered.
- The garden edging should, ideally, be soft-scaped with a strappy architectural species including however not limited to: *Liriope muscari*, *Ophiopogon japonica* and *Lomandra longifolia 'Tanika'*.
- Mulch the exposed surface area of the garden bed to a depth of 75 – 100mm with a suitable material including Eucalyptus wood chip feathered to 25 mm near the edges

Should you require any further information, do not hesitate to call our office for assistance.

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MAA MWIA

APPENDIX 4

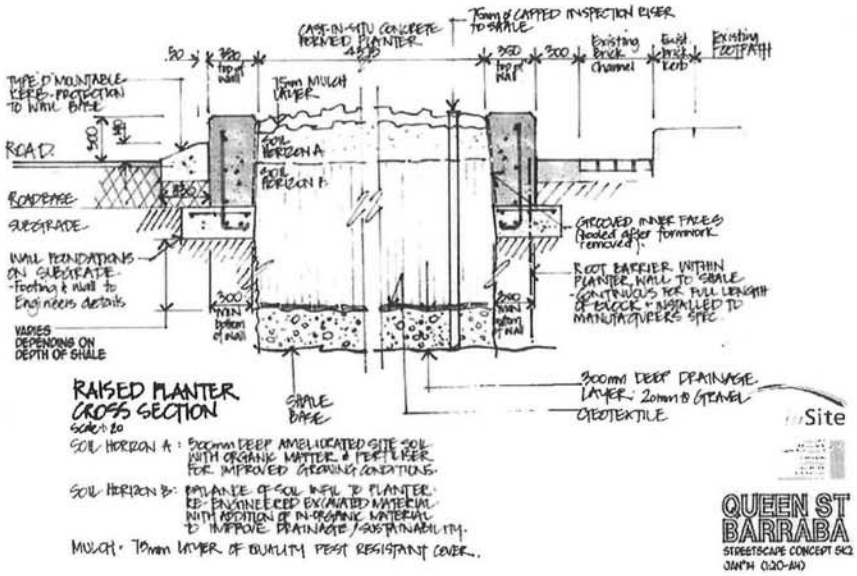

Fig.2 Cross section of proposed raised planter.

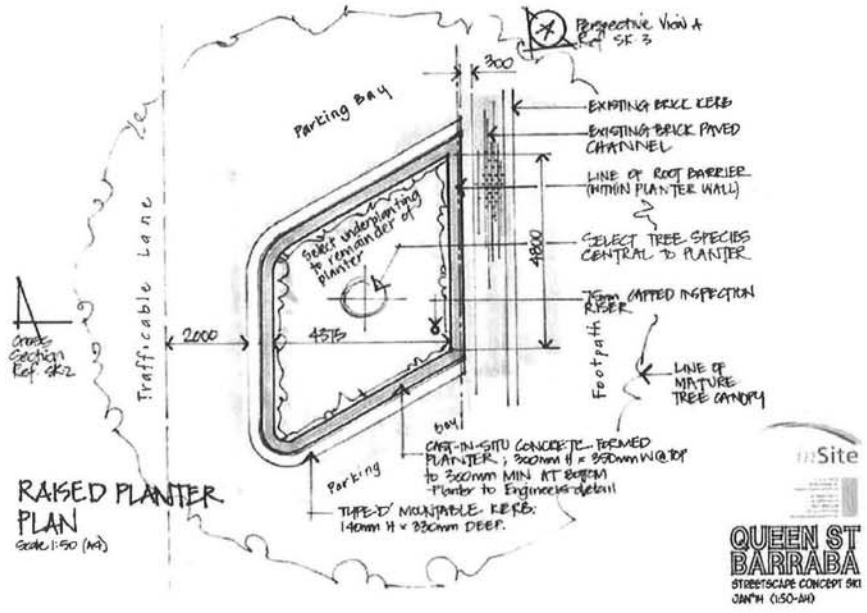

Fig.3 Plan view of proposed raised planter

APPENDIX 2

Tree Report

Site Address: Byron & Otho Streets
Inverell NSW 2360

Prepared for: Brett McInnes
Inverell Council
PO Box 138
Inverell NSW 2360

Prepared on: 13th April 2016

Report number: CD1108C

Prepared by:
Mark Hartley
Senior Consulting Arborist- AQF Level 8
Grad Cert Arboriculture (1st Class Honours)
Dip Hort (Arboriculture) with Distinction
Dip Arboriculture, Dip Horticulture
LMAA; LMISA; LMIPS
ISA Certified Arborist WC-0624 (since 1990)
Registered Consulting Arborist™ #0001
ISA Tree Risk Assessment Qualified
Registered QTRA user (No. 807)
Member - Society of Risk Analysis Australia & New Zealand

Prepared on behalf:
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Executive summary

This report considers information contained in the report prepared by New Leaf Arboriculture. In particular, it considers the suggestion that the Plane trees in Byron Street be retained until they complete their Useful Life Expectancy combined with making changes around the trees in order to improve their growing environment.

This report, along with earlier reports, finds that it is possible to retain the trees for a number of years. However, as has been pointed out in earlier reports by the Arborist Network and in the report by New Leaf Arboriculture, most of the trees in Byron Street have a limited useful Life expectancy. As a result, some forward planning in terms of tree removal and replanting is prudent.

There is no disagreement amongst the experts that the past and current treatment of the trees has severely impacted on the life expectancy and that; as a result, at some stage in the next few decades most of the Plane trees in Byron Street will need to be removed.

The question that appears to be in dispute is when should that process occur? This decision is not based in arboriculture alone. There are many factors other than the Useful Life Expectancy of the trees which in itself is arbitrary and speculative. Decision makers also need to consider the benefits provided by the tree and to weigh this against the true costs of retaining the trees. This cost benefit analysis then needs to be weighed against the various community expectations which in themselves are extremely diverse.

The fact that the trees were planted in pipes demonstrates that particular elements of the community did not want root damage. The fact that several trees have been poisoned demonstrates that some members of the community do not value the trees highly. The fact that the trees have been cut back severely suggests that there are members of the community (particularly building owners) who are not enamoured with the potential size that these trees will attain.

In contrast, the community concern that has motivated members of the public to obtain additional advice and to take action to retain the trees demonstrates the love that some members of the community have for the trees. This is a sentiment to which many of us can relate.

There is not, and never will be, a perfect management plan for these trees. Regardless of the actions taken, one party or another will be justified, at least from their perspective, in complaining about the action taken.

The team at the Arborist Network have never considered the removal of the trees to be an absolute necessity. Rather it sees it, regrettably as the most appropriate option given the past mistreatment of the trees, the relatively short usefulness of the trees and benefits that can be attained from a well-designed properly implemented tree planting program.

Brief

- To review the report by New Leaf Arboriculture and give a brief explanation of any differences of opinions that may exist

- Provide any additional information that may be relevant that arise from the information contained in the report by New Leaf Arboriculture.

Documents reviewed

Plane Tree Arboricultural Assessment – Jacki Brown 14th March 2016
Plane Tress Inverell Town Centre - FILE NO: S30.11.4, Council Report 26th August 2016 – Brett McInnes

Differences in the reports

There are not any significant observations documented in the report by New Leaf Arboriculture (NLA) that are in contradiction with the observations documented in the reports by the Arborist Network (AN).

The NLA report does introduce new information that is not contained in the AN reports including:

- the age of the trees,
- Useful Life Expectancy of the trees
- an estimation of the amenity value of the trees using the Thyer system,
- various suggestions to retain the trees in their current location
- a projected canopy cover based on different scenarios

The NLA report does not consider or otherwise address the following matters:

1. The council's records and documentation relating to the maintenance of the tree related issues (NLA 3.1)
2. the impact of the planting method from the 1990's on the morphology of the root system of the trees and the impact that this is having on the trees (NLA 4.7)
3. the direct and indirect costs associated with the works recommended

The recommendations provided in the NLA report have been provided without giving weight to the three items numbered above (NLA 3.1). As a result, if appropriate investigations were made, relevant data was gathered and consideration were to be given to these items it is entirely conceivable that the recommendations contained in the NLA report may vary considerably from their current position.

If the impact of planting the trees in pipes is ignored, the current cost of maintaining the trees is not considered, and the cost of the work recommended in the NLA report is not weighed in the decision making process then it would be hard not to agree with the conclusions contained in the NLA report.

Addressing the differences

Tree age

The age range provided for the trees of between 20 and 60 years seems reasonable given the size of the trees. There is no reason to doubt the ages provided by 4.5 of the NLA report.

It is agreed, as stated in the NLA 4.1, that "*the Plane Trees are generally in good health and condition, **considering their constrained planting conditions and the presence of Sycamore Lace Bug***" (emphasis added). The health of the tree and the planting conditions are far less than ideal and this has already had a significant impact on the trees. This is reflected in the Useful Life Expectancy provided in the NLA report.

London Planes are a hybrid favoured for their great vigour and ability to resist environmental impact, particularly those caused by pollution. The hybrid was first discovered in the 17 century by John Tradescant the younger (Venables, 2015).

As with most F1 hybrids, London Planes are more vigorous than Platanus species in general. The oldest London Plane in the UK is at Bishop's Palace at Ely and is believed to have been planted prior to 1663 placing this tree at nearly 400 years old. Numerous examples exist of London Planes in the 250-year age bracket. However, this is not a true reflection of the potential age of this hybrid. Perhaps a more realistic age can be gleaned by considering the less vigorous *Platanus orientalis* which can live well over 1000 years[1], attain heights of over 40 metres and trunk diameters of greater than 8 metres.

Useful Life Expectancy

Useful Life Expectancy is a subjective system that is a modification of Safe Useful Life Expectancy (SULE). SULE was a tool developed by Jeremy Burrell for use in association with the British Standard for protection of trees on development sites. SULE, in turn, was replace by Tree AZ. ULE has never been published in a peer reviewed journal.

The NLA report does not reveal the method used to determine the ULE. All the same, 26 trees were assessed and a summary of the ULEs is provided in 4.2 of the NLA report. The method of selecting only 26 trees has not been revealed and no evidence of the use of a random number generator was provided. As a result, the selection cannot be considered random or unbiased.

It is interesting to note that one of the trees was given a ULE of 10 to 15 years and only 5 trees have a ULE of 40 or more years. The NLA ULE analysis demonstrates that in the main, the trees have a ULE of less than 40 years.

If a median score is given for each category and the 5 trees with a long ULE are given 60 years, then the average ULE is 37 years. Given that these trees were planted in the 1990's, this suggests that the trees will on average have a total life expectancy of around 70 years. This is substantially shorter (less than 30%) than would normally be expected from this species in an urban setting.

[1] http://www.monumentaltrees.com/en/trees/orientalplane/records/

Given the extent that life expectancy for this species has been impacted by past decisions does, raise some concerns. If nothing is done, then the future for these trees is bleak.

The recommendation of the NLA report is to retain these trees, to improve the growing conditions and to replant using the same species where trees are not present. The inference is that the issues associated with tree selection and planting be managed so that the decision to remove the trees and start afresh can be deferred to another point in time.

There is some merit in deferring the removal of the tree. Not only does it give the immediate benefit of retaining the trees, it defers the problems to a future generation. At that point in time, having expended considerably on improving the condition and maintaining the trees, the future generation will be left with greater cost associated with the removal of bigger trees, and the loss of even more tree canopy. At that juncture in time, the community will be again addressing the same issues and the current generation will have left no durable tree legacy to the future generations.

The amenity value

The NLA report produces an Amenity Tree Valuation for a number of the trees using the Thyer Tree Valuation method. This method was developed by Peter Thyer. It includes arbitrary values and the formula and the processes of its development have not been subject to mathematical or scientific rigour. However, the process of putting some arbitrary value on a tree may be a useful process even if the end result is arbitrary.

The Thyer method has gained some popularity particularly in NSW. However, the system has not been universally accepted and is not without it objectors. In addition, there are numerous other valuation systems including the Draft Australian Standard (which has now been aborted) the Burnley method, the Revised Burnley method, the Helliwell method and Council of Landscape Tree Appraisal method that is the principal method used in the USA.

Whilst it would be a simple matter to question a number of the decisions made and produce different scores, the fact remains that the trees do provide amenity and that amenity is of value.

The NLA report states that "*Peter Thyer has published a list of additional factors which provide measurable value, which have not yet been included in the calculations*" Whilst it is true that Peter Thyer has compiled a list of other factors that could be included[2] the assumption drawn by NLA report that "*the assessed nominal values are an underestimation of the trees' values*" is without substance. It is unclear how these factors, would be incorporated into any future equation and there has been no discussion by Peter Thyer on including these factors into his valuation system. As a result, there is nothing that would allow any party to draw the conclusion that any new system developed by Peter Thyer would produce an increased valuation.

If Peter Thyer thought that his current method was significantly underestimating the amenity value of trees he would have amended the system to correct the issue. As a result, it would

[2] http://peterthyer.com/Tree%20valuation%20factors%202005%20PT.pdf

seem likely that if Peter Thyer was going to add additional factors that this would result in an increase in the amenity value of the tree.

In addition, whilst the Thyer method has gained popularity in NSW no explanation is provided as to why the Revised Burnley method, for example has not also been considered, particularly given that this may produce a much lower value for the trees (Watson 2002).

Management and retention of the trees

The use of Water Sensitive Design (WSD) may have some benefits where insufficient rainfall or stormwater issues need to be addressed. However, it must be understood that Inverell receives roughly 25% greater rainfall, for example, than Melbourne and the average daily temperatures in Inverell are cooler. While installing WSD may be appropriate for any new works retrofitting such as system is not possible without causing significant harm to the trees. As such, it seems appropriate to dismiss the retrofitting of such a system.

There is no doubt that the subject 26 trees can be retained for a number of years, particularly if additional space and appropriate care are provided to the trees. The NLA report provides a number of suggestions. In particular, the NLA report states that there is a need for roots to access additional soil volume and to have an increased permeable surface in order to support tree health.

Whilst this is true in part there are many London Planes planted in extremely confined spaces with small openings. Sydney City, for instance, has many such examples. However, in the case of the trees that have been planted in pipes there are some unique issues. The trees have essentially been planted in containers with no room for the roots to escape into the adjacent soil apart from growing over the top of the pipe.

As a result of the restriction provided by the pipe, a mass of roots has been forced to grow close to the surface. The stability of the tree is dependent on these surface roots and any resulting sinker roots growing outside of the pipe. As a result, cutting of roots close to the surface has the potential to destabilise the tree and to adversely affect the stability of the trees. This makes the use of root trenches, soil cells, and ripping or decompaction of the soil, and similar options entirely unsuitable.

Increasing the size of the openings, as a result, would be of some benefit to the trees. In the case of trees in the bitumen parking area the size of the openings recommended in the NLA report would result in the need to delete two parking spaces for every tree. There is a cost to the community associated with the loss of a parking space. This cost is in the order of $3035[3].

In addition to the loss of two parking bays per tree there is also the cost associated with the removal of the hard surfaces and the finishing of the edges of these enlarged openings. Conceivably, the provision of these increased openings on trees in the parking area will come at a cost in the order of $7000 a tree.

[3] Inverell Shire Council current developer contribution for a single car space. Note the actual cost of providing a replacement car space in many instances is more than double. Source:-Brett McInnes

A benefit of the increased size of the openings is that there will be some reduction in damage to the hard surfaces for a few years whilst roots continue to enlarge and grow further away from the trees. This has been reflected in a reduction in maintenance costs by $930. As a result, it is conceivable that this retrofit to trees in parking bays will be at a cost somewhere in the order of $6070 per tree where two parking spaces are lost (about 5 trees of the 26 used in the NLA sample) or $3035 a tree where only one parking bay is lost (about 16 of the 26 trees).

In addition, it is noted that two of the trees (Trees 6 and 51) are beside a driveway. As a result, an allowance has not been made for loss of a car park where there is a driveway as this would result in the restriction of vehicular access to the property.

Likewise, those trees located in the landscape beside the crossings would require, on one side, the loss of one car space, the relocation of the curb and guttering, in some instances the redesign of the stormwater. On the other side where pedestrian access and pram ramps are present there is only a limited number of options the most fail proof being to remove the existing paved area and to reinstall a fully engineered path.

This engineered path would need to be strong enough to resist cracking as a result of the force exerted by tree roots (around one megapascal). In addition, to prevent movement of the paths there will be a need to install sufficient piers or ground anchors such as helical screws.

Along with the loss of a parking space at $3,035, there is likely to be another $12,000 to $15,000 associated with new curb guttering and a fully engineered pathway. Again there is likely to be a reduced need for maintenance for perhaps 5 to 10 years. As a result, this option results in a net increased cost somewhere in the order $10,000 to $15,000 and will apply to about another 16 trees. For the purpose of this exercise the lowest figure will be used.

The cost of increased openings would be around $238,000. This equates to about $306 per year per tree amortised over 30 years. It must be remembered that the NLA report suggests that the majority of the trees will probably need to have be removed or will be due for removal around this time.

In the same manner, it is agreed that appropriate tree pruning is a part of any good management program. It would seem inevitable that if the trees are retained that pruning will be required on a periodic basis, perhaps every 3 to 5 years. Because council does not have a dedicated tree crew, this pruning work will need to be outsourced if the pruning is to be of a quality and nature such that it complies with AS4373 -2007 *Pruning of amenity Trees.* It is likely that the trees will require an allocation of $50 or more a year to address the routine pruning of the trees.

A cost benefit analysis

Equally as important is that the title of this section (5.8) in the NLA report. Whilst the title suggests that a cost benefit analysis has been considered no such analysis has been provided. The need to undertake a cost benefit analysis is supported by the NLA report and the AN report. A standard accounting approach to a cost benefit analysis can be found in Stewart, O'Callaghan, & Hartley (2013). This report will address the cost benefit analysis in more simple terms by ignoring the impact of inflation and interest.

When considering the benefit of trees, Moore (2009) suggests 100,000 "*large mature urban trees growing in an Australian city*" can provide an annualised benefit of over $45,000,000 or an annualised benefit of more than $450 a tree. It would be hard to consider most, or for that matter any, of the sampled 26 Plane trees, as large. As such, it would be reasonable to consider benefits of the trees as being somewhere in the order of $250 a year. In addition, some allocation need to be given to the aesthetic value of the trees. This is far more subjective and therefore more complicated.

Whilst the trees do have an amenity value the entire value cannot be factored into a cost benefit analysis for each year. Allowing for the average $12,200 amenity value provided in section 6 of the NLA report and allowing for an interest rate of 4% (the current mortgage rates) this amenity value could be valued at $488 per annum (4% of $12,000 or the cost of financing the acquisition of amenity of that value).

A cost benefit analysis also needs to consider the costs. These costs include, the costs of cleaning, the costs of repairs to infrastructure, the costs of tree care, the opportunity costs of any land set aside, and the amortised cost of removal of most of the trees within a 30-year period.

Inverell Council has stated that in the two years it has spent an average of $415 a tree on managing trip hazards associated with the trees on Otho Street and Byron Street. Included in the 60 trees cited by the council are seven trees that have been provided enlarged areas and several more that are much younger and more recent plantings

Furthermore, the costs associated with root activity from these trees is likely to increase as they age. As a result, even if the hard surfaces around the trees are removed to provide more space, the roots will continue to grow under adjacent hard surfaces resulting in the same need to undertake repair works. However, such works will be further from the tree and potentially closer to the general pathway of pedestrians making the repair work even more critical.

The annual cleaning costs associated with the Plane trees cannot be determined with any certainty. The leaves of London Planes are large and as a result are more inclined to get caught in gutters, grates and drains. As a result, there is a need to remove the leaves of Plane Trees more regularly than leaves with a smaller surface area. However, an annualised cost of $2,600 ($100 per tree per year) is likely to be ultra conservative.

In addition, when the fruits start to fall, large volumes of follicles are released not only are these messy with the follicles often entering adjacent premises. The follicles have been reported as causing health issues (Sercombe, 2011). More significantly, stellate trichomes that are released from the leaves in early spring are highly irritating to the respiratory system and to the ocular system (Sercombe, 2011). As a result, those working on pruning and removing London Planes should always dust masks to reduce the health risks associated with this genus.

Health issues from these trees do not just affect humans. Savvidis, Zartaloudis & Vafeas (2009) demonstrated that the Sycamore Lace bug is highly toxic to Rainbow Trout. The impact on other aquatic organisms is largely unknown. Consequentially, the implication of

lace bugs being knocked of foliage and flushed through the stormwater system and into the adjacent waterway needs to be considered.

When populations of lace bugs increase rapidly, such as has been the case in the last few months, early intervention and management of the lace bugs is desirable for the health of the trees and potentially for the health of aquatic organisms. An allowance of $240 per tree per treatment is likely to be required with treatment being required every two years.

Cost benefit analysis (excluding interest and inflation)

Benefits

Annualised tangible benefits	$250.00
Annualised value of amenity benefits	$448.00
Total benefits per tree per annum	$673.00

Costs[4]

Reduction of trip hazards*	$415.00
Removal $950 / tree divided by 30 years*	$30.00
Management of the Lace Bug (once every two years)	$120.00
Net cost per tree of larger openings amortised over a 30-year period	$306.00
Cleaning of tree debris / stormwater clearing	$100.00
Cyclical minor pruning	$50.00
Health and environmental issues	???????
Additional building and infrastructure maintenance costs	???????
Total costs per tree per annum (in excess of)	**$1021.00**
Net annual loss/tree if the NLA recommendations are implemented (greater than)	$348.00

Using the above cost benefit analysis, there would be a net loss of more than $340 per tree per annum by retaining the trees and making adjustments to improve their life expectancy. Unfortunately, in this instance the environment in which the trees were planted combined with prior treatment of the tree, the species selection and planting mistakes does not result in a cost benefit curve typical of a semi-mature or mature tree shown in Figure 2 of the NLA report. Rather, the trees have already moved towards the latter part of maturity or early senescence as illustrated on that curve.

The above analysis suggests that deferring the removal of just 26 of the London Planes by 30 years would add somewhere in the order of $270,000 in costs. In addition, there is an opportunity cost in terms of the failure to plant and establish new trees and for their amenity value to increase. Persisting with the current tree stock prevents the inevitable need to replant. If replanting is to occur then selecting tree species that have a reduced growth rate, fewer disease issues, smaller sized leaves will result in a greater longevity for the new planting. Likewise keeping the trees further from buildings and infrastructure will reduce the need for maintenance such as pruning.

If the decision is made to continue to use London Planes as the primary street trees of the commercial area of Inverell, it is likely that the city would still be better served by removing a

[4] The costs have been estimated using reasoned estimates and where possible using actual historic figures provided by Inverell Council indicted by the use if the symbol *

number of these trees now, removing the pipes and preparing the planting sites and then replanting with trees that are in ideal condition and form, that are able to grow at their normal rate. An example of their normal growth rate can be seen in the Planes in the garden area at the western end of Byron Street, that already have more than twice the biomass of those that have been planted in pipes.

This cost benefit analysis is only on the 26 trees sampled in the NLA report. The actual determent cost would be almost double given there are 48 Plane Trees remaining in Otho (between Rivers and Byron) and Byron (between Campbell and Wood), of these 40 are in concrete pipes including the 20 in bitumen in the parking lane.

Plane tree plantings elsewhere

Whilst London Planes are a popular urban tree, the problems associated with the root system of these trees has caused problems in areas with a large amount of urban infrastructure. In recent times, Wollondilly council has sought community response on the proposal to remove the Plane trees in Picton[5].

Similarly, Penrith City Council has recently decided to remove all the London Planes in Queen St Marys[6]. Tragically, in this instance, however, the decision was made to remove all the trees in one go a decision that is not believed to be at all appropriate in almost any circumstance.

It may be of interest to note that historic records show that "*The first session of the 1938 convention of the Victorian Tree Planters' Association was held at Mansfield*" and that at that session "*Councillor Warner (Camberwell) moved, and Mr. Lawson (Yallourn) seconded, that the conference affirm the principle of planting no more plane trees in the metropolitan area and in provincial towns. The motion was agreed to*[7]." It seems that some lessons may need to be learned afresh every few generations.

Should you require any further information, do not hesitate to call our office for assistance.

Mark Hartley
Senior Consulting Arborist- AQF Level 8
Grad Cert Arboriculture (1st Class Honours)
Dip Hort (Arboriculture) with Distinction
Dip Arboriculture, Dip Horticulture
LMAA; LMISA; LMIPS
ISA Certified Arborist WC-0624 (since 1990)
Registered Consulting Arborist™ #0001
ISA Tree Risk Assessment Qualified
Registered QTRA user (No. 807)
Member - Society of Risk Analysis Australia & New Zealand

[5] http://www.wollondillyadvertiser.com.au/story/3471438/what-do-you-think-of-pictons-plane-trees/
[6] https://www.penrithcity.nsw.gov.au/News/Planning/Queen-Street-Streetscape-Improvement-Project/
[7] http://trove.nla.gov.au/newspaper/article/11173599

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Sercombe, JK, Green, BJ, Rimmer, J, Burton, PK, Katelaris, CH, & Tovey, ER 2011. *London Plane Tree bioaerosol exposure and allergic sensitization in Sydney*, Australia. Annals of Allergy, Asthma & Immunology, December 2011, vol.107 no. 6, pp. 493-500.

Appendix 1: Photos

Plane trees removed from Queen Street St Marys.
Source: Daily Telegraph

Plane trees planted in a city street without tree pits or large openings
Source: Google

Coalescing of the roots to form a solid root plate
Source: Inverell council

There is not lateral movement of roots through the pipe and have significantly inhibited vertical root growth
Source: Inverell Council

There is not lateral movement of roots through the pipe and have significantly inhibited vertical root growth
Source: Inverell Council

APPENDIX 3

Pyrus calleryana Chanticleer ®

Family:	Rosaceae.
Landscape value:	A superb, upright ornamental pear introduction with a dense habit and attractive foliage. Excellent for sites where lateral space is restricted, its tough disposition and aesthetic attributes combine to make for a wonderfully versatile tree be it for home gardens or streets and public areas.
Height:	11 metres.
Width:	6 metres.
Growth rate:	Moderate.
Habit:	Narrowly conical. Dense.
Foliage:	Lustrous dark green leaves that turn gold, plum and burgundy in autumn.
Flowers:	Masses of white flowers produced in large corymbs in spring.
Fruit:	Small, dull gold to russet coloured fruit. Inedible.
Bark:	Greyish-brown and lightly furrowed.
Tolerances:	Adaptable to a wide range of site conditions including quite dry conditions, slightly alkaline soils and air pollution. Able to handle intermittently wet, heavy soils.
Comments:	Best in full sun. Less susceptible to wind damage than many other Pyrus cultivars. Currently one of the most widely planted ornamental pears in the USA and becoming increasingly popular in Australia.

Click on the image to enlarge it

Fleming's top 10 trees

AUSTEP

This cultivar has been evaluated on the Austep website

Click for details

Back to List

All tree sizes are an estimate of the tree dimensions at 20 years.


Coonabarabran Community Centre
71
BAKERY

APPENDIX 4

NATIONAL ARBORETUM CANBERRA

Home About Partnerships Engineers Australia

Engineers Australia

The National Arboretum Canberra is proud to partner with Engineers Australia, the peak representative body for the engineering profession. Engineers Australia sponsors Forest 41, the Freefall Pin Oak Forest, planted in 2009 at the National Arboretum Canberra.

Pin oak 'Freefall' Forest 41

Engineers Australia has a long tradition of planting trees in the National Capital and in 2009, Engineers Australia commemorated its 90th anniversary by sponsoring the Pin Oak Forest in the National Arboretum Canberra; becoming the first organisation to sponsor a forest at the new Arboretum.

Mr Jon Stanhope, Chief Minister of the ACT, joined with members of Engineers Australia and Dr Robert Boden OAM to plant the first Pin oak trees in Forest 41 at the Arboretum on Tuesday 19 May 2009:

From left to right: Mr Peter Taylor, Chief Executive, Engineers Australia; Mr Tom Brimson, President Canberra Division, Engineers Australia; Mr Peter Godfrey, National President, Engineers Australia; Chief Minister Jon Stanhope; Mr John Mackay, Chair of the Board of Governors of the Arboretum. 2009.

Forest 41 is about 600 *Quercus palustris* 'Freefall' trees, commonly called the Pin oak 'Freefall'. It is one of Canberra's most outstanding trees. With its straight trunk reaching to 30 metres it is an excellent street tree, growing along Torrens Street in Braddon, La Perouse Street and Stuart Avenue in Griffith.

Pin oaks' autumn colour is spectacular, but unfortunately the dead leaves are carried right through the winter and do not shed until the new buds burst in spring.

In 1965, Dr Robert Boden OAM began developing a cultivar of the Pin oak which would behave like most other oak trees and properly defoliate, ie. lose their leaves, after the autumn show. The Pin oak 'Freefall' cultivar is the outstanding result of his research, a tree now grown and distributed around Australia.

APPENDIX 5

Jacki Brown

180 connections

Arboricultural Consultant / Consulting Arborist (AQF Level 5 Arborist) / Landscape Designer

Sydney, Australia Architecture & Planning

Current	New Leaf Arboriculture
Previous	Burwood Council, Arboreport, ecodesign
Education	Ryde TAFE
Recommendations	1 person has recommended **Jacki**
Websites	Company Website Company Website

Summary

Arboricultural consultant with a background in landscape design and horticultural, land management (bush regeneration) and arboricultural qualifications. Owner of New Leaf Arboriculture.

Specialties. Construction tree management, tree management plans, tree impact assessments, pre-development tree assessment, landscape planning, landscape design, landscape makeovers

Experience

Principal Arboricultural Consultant

New Leaf Arboriculture

May 2013 – Present (3 years) Sydney, Australia

Providing independent arboricultural consultancy services including tree assessments, arborist's reports, tree management and project arborist services.

Continuing Professional Development
Attended:
World Green Infrastructure Congress - October 2014
Institute of Australian Consulting Arboriculturists (IACA) meeting, Brisbane - September 2014
Local Government Tree Resource Association (LGTRA) meeting - July 2014 - speakers presented on legal issues and compliance regarding trees

Landscape Technician

Burwood Council

July 2012 – August 2014 (2 years 2 months)

Landscape design and management of public open space projects, and tree management.

- Writing, editing and researching policies and procedures, including park Plans of Management, and Street Tree Management Strategy and procedures.
- Design documentation – written, AutoCAD
- Tree Management duties including public and private tree assessments and recommendations, contribution to Land and Environment Court proceedings.
- TRIM working group & TRIM Champion – encouraging and assisting staff in the increased use of TRIM record management system.
- Application of the Local Government Act, Environmental Planning and Assessment Act, Local Environmental Plans, and Development Control Plans, particularly in relation to public land management and development assessment.

Consulting Arborist

Arboreport

November 2008 – June 2012 (3 years 8 months)

Arboricultural consultancy – arborist's reports and advice for government agencies, private landowners, developers, architects & builders. Familiarity and experience with AS4970 – Protection of Trees on Development Sites.

Landscape Designer

ecodesign

November 2007 – June 2012 (4 years 8 months)

- Design documentation – written (specifications, design statements, Statements of Environmental Effects), AutoCAD, and hand drawing
- Client and stakeholder consultation including government staff, architects, builders, engineers, developers, other professionals & general public
- Preparation and presentation of design options & professional advice
- Preparation of Vegetation Management Plans, and bush regeneration advice
- Key role in the RMC Duntroon Tree Management Plan which won the 2010 AILDM Landscape Management Award

Freelance Writer

Universal Magazines

2007 – June 2012 (5 years)

Volunteer Writer

Landscape Outlook (industry journal of AILDM)

2006 – 2008 (2 years)

Horticulturist

Garden Concepts

February 2006 – December 2007 (1 year 11 months)

Providing horticultural services, including gardening, soft landscape installation, customer service, and planting design

Certifications

Accredited Member

Institute of Australian Consulting Arboriculturists, License ACM0032012

July 2012 – Present

Volunteer Experience & Causes

Vice President

Secretary
Institute of Australian Consulting Arboriculturists
July 2015 – Present (10 months)

Opportunities Jacki is looking for:

- Joining a nonprofit board
- Skills-based volunteering (pro bono consulting)

Causes Jacki cares about:
Animal Welfare
Civil Rights and Social Action
Economic Empowerment
Education
Environment
Health
Human Rights
Politics
Science and Technology
Social Services

Skills

Urban Forestry Trees Landscape Design Site Planning AutoCAD
Landscape Planning Landscaping Urban Design Horticulture Arboriculture
Garden Design Environmental Impact Assessment Plant Identification
Arboricultural Impact Assessment Landscape Architecture See 31+

Publications

In the Garden
Backyard & Garden Design Ideas
2011

From 2009 to 2011
In the Garden section is a seasonal guide to garden tasks for home gardeners
Authors: Jacki Brown

Education

Ryde TAFE
Diploma of Horticulture (Arboriculture), Arboriculture
2009 – 2010

Ryde TAFE
Certificate III in Conservation & Land Management (Natural Area Restoration), Bush regeneration
2008 – 2008

Diploma of Horticulture, Landscape Design
2005 – 2006

University of Sydney
Bachelor of Arts, English, Psychology
2001 – 2003

Interests

Urban Forestry Landscape Design Arboriculture Ecology Planning
Business Development Continuing Professional Development

Recommendations

A preview of what LinkedIn members have to say about Jacki:

> *Jacki's is a true professional. Her sensitivity, commitment and dedication to the environment brings a quality that transcends the expected. Jacki's work an*
>
> See more

Sign up to see who recommended Jacki

The Arborist Network
58 South Creek Road
Shanes Park NSW 2747
Phone: (02) 9835 1234 Fax: (02) 9835 0066

Our reference: CD1108

Tuesday, 19 April 2016

Inverell Council
PO Box 138
Inverell NSW 2360

Dear Brett,

Re: Professional membership

The choice of professional membership to an arboricultural organisation can be motivated by many factors. The decision to be a Registered Consulting Arborist of Arboriculture Australia and not to apply for membership as an Accredited Member of Institute of Australian Consulting Aboriculturalists (IACA) was made for a number of reasons.

A Registered Consulting Arborist is required to have a Diploma of Arboriculture rather than earlier qualifications such as a Diploma of Horticulture (Arboriculture) that only contained one unit of arboriculture. Arboriculture Australia does not assess applicants, in order to maintain objectivity and to avoid accusations of "old boys" clubs.

In contrast an Accredited Member of IACA does not require formal qualifications in arboriculture and does not require current AQF Level 5 qualification in Arboriculture. Rather, the executive of IACA can and does grant equivalency to other qualifications that contain substantially less arboricultural content provided that the applicant can supply several reports that meet the requirement of the association.

In addition, IACA does not allow membership to consultants who gain an income from undertaking practical arboriculture because this, they assert, may lead to a potential conflict of interests. This is a policy that I believe is undesirable and largely a marketing ploy by those who lack suitable practical experience.

This lack of practical experience, for example, may be the reason that the NLA report does not discuss the impact of the pipes on root morphology of the trees. Having been involved in the transplanting of tens of thousands of trees I have a clear understanding of how roots grow and respond to injury and various constraints. This information is not just of value to me it is also of value to other Registered Consulting Arborists who interact with me at various functions.

There is a risk, of course, that any party being paid for advice may bias their advice to serve their own end, for example, to earn more in fees than is in the client's interest or to provide an opinion that supports a client's view simply to earn an income. In spite of this, many

professionals provide both advice and their professional services including solicitors, accountants, doctors, dentists and surgeons. Amongst these are some of our most trusted professions!

Operating a business does not make an individual unethical. Individuals either make the choice to, or not to, act ethically in any situation. Any professional organisation that supports a bias against an individual simply because they have an entrepreneurial spirit is in itself, engaging in a rather dubious ethical activity.

Professional organisations should encourage ethical behaviour in all the endeavours of its members, both public and private, and be quick to take action if its code of conduct is crossed. Treating ethical individuals with profound bias because they have the potential to cross the line is like banning cars from the road because they may exceed the speed limit. It is not something that society as a whole would accept. As a result, I struggle to support an organisation that holds such values as central to its existence.

A statement on integrity

There may have been suggestions by naive individuals that I have provided services to Inverell Council other than consulting services this is entirely without substance. Only consulting services have been provided by myself or any of my affiliated companies and entities.

An assertion that my opinion can be bought is likewise without foundation. Unlike nearly all of my colleagues, I sold my tree pruning and removal business in 2002 having made enough to retire. I manage a large property portfolio, a modest share portfolio and have a sizable income from an international patent.

Since my retirement from practical tree work I have dedicated myself to the advancement of the profession and this includes teaching arboriculture for more hours each year than a full time teacher. Currently, I teach more hours of Diploma level arboriculture than every other TAFE teacher in NSW combined. (This provides a modest income in itself). I also serve in a voluntary capacity on a number of national and international boards and committees dedicating a day or more, most weeks.

The net income that I earn from consulting is only a small fraction of my total earnings and, respectfully, the influence of a low dollar client, such as Inverell Council, is so small that it has to be considered insignificant. Rather, what motivates me in a situation such as this is the potential to look for practical solutions that have the potential to leave the treescape of Australia in the best possible condition into the future.

Should you require any further information, do not hesitate to call our office for assistance.

Mark Hartley

Name: Mark Andrew Hartley

Address: 58 South Creek Road, Shanes Park, NSW 2747

Education:

1979	UPCA Tree Care Certificate – Pass
1981	UPCA Tree Care Certificate – Credit
1986	Certificate in Continuing Studies Rivett Enterprises (Melbourne)
1987	Cert. Arboriculture AHCS (Melbourne)
1987	Cert. Continuing Education in Applied Arboriculture M.F.Blair Institute of Arboriculture (USA)
1988	Instructors Cert. Applied Arboriculture M.F.Blair Institute (USA)
1990	Certified Arborist Western Chapter - International Society of Arboriculture
1993	Train the Trainer TAFE articulated Advanced Certificate in Occupational Health Management 8627 Advanced Certificate in Training and Development 8628
1994	Palm Physiology Workshop Shigo Trees and Associates - Hawaii Botanic Gardens
1995	Certificate in Tree Biology - Appalachian State University (US)
1997	Certificate in New Tree Biology - Appalachian State University (US)
1999	Certificate III in Scientific Photography-TAFE (NSW)
2000	American Society of Consulting Arborists, Consulting Academy (Qualified to give evidence in the USA court system)
2006	QTRA licensed user
2008	QTRA licensed user update
2009	Diploma of Horticulture (Arboriculture) with Distinction - TAFE (NSW)
2009	TAA Certificate IV - Unity College ACT
2009	QTRA instructor training
2010	Diploma of Horticulture - Hortus (South Australia)
2011	Certificate of training in Advanced Tree Biology: Photosynthesis and Respiration Warnell School of Forestry and Natural Resources (University of Georgia)
2011	Certificate IV in Occupational Health and Safety – Learning Sphere- (NSW)
2012	Diploma of Arboriculture – Australian College of Mining (NSW)
2013	Graduate Certificate in Arboriculture with First Class Honours –University of Melbourne
2013	ISA Tree Risk Assessment Qualification (TRAQ) training
2013	QTRA licensed user update – Intermediate
2014	Certificate IV TAE – Accredited Online Training

Trade Affiliations:

Life Member	International Society of Arboriculture	1988 -
Life Member	International Palm Society	2000 -
Life Member	International Society of Arboriculture Australian Chapter	2000-
Member	American Society of Consulting Arborists	2000 - 2005
Life Member	National Arborist Association of Australia	2003 -
President	National Arborist Association of Australia	1988 – 1992
Board member	National Arborist Association of Australia	1998-2001 2003-2011
Education Chair	Arboriculture Australia (formerly NAAA)	2003-
Committee member	ISA NEC and Awards committees	2009 –
Member	Society of Risk Assessment -ANZ	2014-

Awards:

1995	Professional Consulting Arborists of America, International Arborist of the Year
1996	Winner of the National Arborist Association's Grand Award for - Excellence in Arboriculture - Transplanting
1997	Winner of the National Arborist Association's Award of Distinction for - Excellence in Arboriculture - Transplanting
1997	Winner of the National Arborist Association's Award of Distinction for - Excellence in Arboriculture - Tree Pruning
1998	Winner of the National Arborist Association's Grand Award for Excellence in Arboriculture - Transplanting
1999	Winner of the National Arborist Association's Award of Distinction for - Excellence in Arboriculture - Transplanting.
2003	Winner of the Tree Care Industry Association's Award for Excellence in Arboriculture - Transplanting.
2009	South Western Sydney Institute of TAFE - Award for Academic Excellence- Diploma Horticulture (Arboriculture
2009	TAFE New South Wales - State Medal - Diploma Horticulture (Arboriculture)
2011	ISA Award of Merit-This is the highest honour bestowed by ISA. It recognizes outstanding meritorious service in advancing the principles, ideals, and practice of arboriculture

APPENDIX 6

Herald Sun
VIC News

City plane trees face the chop as Melbourne City Council diversifies green canopy

June 2, 2015 7:53pm
JOHN MASANAUSKAS Herald Sun

The council has cut down plane trees on Flinders St due to damage from cars. Picture: Jay Town

MELBOURNE is set to eventually lose most of its traditional plane trees under a city council plan to diversify its green canopy.

Sixteen London plane trees have just been removed from Flinders St above the rail yards after the council said they had been damaged by vehicles and posed a safety risk.

They will be replaced by 20 lemon-scented gums as part of streetscape works that will include a new tram super stop between Russell and Exhibition streets.

Melbourne City Council environment portfolio chairman Arron Wood said the council had taken advantage of the need for the tram stop to bring forward works under its urban forest strategy.

"Even though it's always sad to lose big mature trees like that, those 16 trees will be replaced with 20 so we'll actually get a better outcome in the long term," he said.

About 75 per cent of the inner city's trees are planes, but the urban forest long-term plan aims for one species to have no more than 5 per cent coverage.


The felled plane trees leave a gaping hole.

Almost half of the city's tree population will be lost over the next 20 years due mainly to extreme heat, damage and ageing, providing the opportunity to diversify the stock.

Mr Wood said the council had added 15 new species over the past four years, with a total of 12,000 trees planted.

"When you've got too much of one species, it leaves it susceptible to disease, and also leaves (the city susceptible) to the urban heat island effect," he said.

"The more diversity you can get, the more resilient are your trees."

It was revealed last year that the council injects its plane trees with hormones in a bid to make them less irritating for allergy sufferers.

The city's tree canopy would be increased from 22 per cent now to 40 per cent by 2040 under the urban forest strategy, while trees removed from heritage parks and spaces would be replaced with similar species. Mr Wood said that the strategy had been picked up by other councils around Australia, and later this month the council would launch a special template that municipalities could use to develop their own urban forest plans.

The council owns about 70,000 trees, which are worth an estimated $650 million.

john.masanauskas@news.com.au
Twitter: @JMasanauskas
Comments

Melbourne City Council to replace Melbourne's trees with exotic species

May 31, 2014

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Reporter
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Elms lining St Kilda Road. *Photo: Pat Scala*

Melbourne's beloved tree-lined streets are under threat from the city's creeping hot, dry weather.

Inner-city soil is notably dry after an unusually hot autumn and Melbourne City Council will consider taking the unusual step of watering its trees this winter to help steel them for the year ahead, environment councillor Arron Wood said.

Streetscapes with their familiar mix of elm and plane trees are set to change, as workers plant 3000 drought-resistant trees from around the world this season.

Some of the avenues of trees in Fitzroy Gardens had suffered during the last drought and would soon need to be replaced, as would trees lining St Kilda Road, according to the council.

Cr Wood said the public was well aware of the impact of heat waves on trees, but the warm, dry weather this year could shorten the life of deciduous trees.

"Come next spring and summer that's when we won't have the moisture levels we need, so really what we're concerned about is you don't then have that buffer in soil moisture in the ground," he said.

Cr Wood said administrators had learnt a great deal about how to manage its trees through hot, dry weather after the last drought.

"We thought plane trees were extremely robust, and they are, up to a certain point, but they're extremely susceptible to leaf burn," he said.

"We're now using trees that are fit for purpose, it doesn't matter if they're introduced or in fact native, it's really about selecting those trees that are resilient, that perform well in extreme conditions," he said. He said it would be interesting to see how Melburnians reacted to their changing environment.

"We've just come to expect Melbourne will always look how it looks, but when you consider most of these trees are quite old and being impacted by these extended periods of dry, there's going to be a real renewal process," he said.

Rainfall in Melbourne for 2014 to Friday was 195.4 millimetres, well below the average of 258.4 millimetres for the end of May, according to the Bureau of Meteorology. "It looks like it will be just below the second-warmest May in Melbourne on record," duty meteorologist James Taylor said on Friday.

Goulburn Post (/)

Bradley St trees to go

LOUISE THROWER
Dec. 18, 2015, 6:30 a.m.

(https://www.facebook.com/sharer/sharer.php?u=http://www.goulburnpost.com.au/story/3582252/bradley-st-trees-to-go/)

(http://twitter.com/share?url=http://www.goulburnpost.com.au/story/3582252/bradley-st-trees-to-go/&text=Bradley St trees to go&via=GoulburnPost)

(mailto:?subject=Bradley St trees to go&body=Hi,I found this article - Bradley St trees to go, and thought you might like it http://www.goulburnpost.com.au/story/3582252/bradley-st-trees-to-go/)

URBAN CURSE: Car dealership owner-manager Kieran Davies says an avenue of plane trees is causing extensive damage to infrastructure and flooding. He will pay for their replacement

AN avenue of eight plane trees in Bradley St will receive the chop next February.

The species, standing more than 30m high, will be replaced with Chanticleer Pears, deemed "more suitable to the urban environment".

Councillors decided six to three to remove the trees following claims by Goulburn Mazda dealership owner Kieran Davies that they'd significantly damaged road, pavement and stormwater infrastructure over the years.

He told the Post he'd forked out about $80,000 in 2010 when heavy rain flooded his business. Mr Davies has blamed the plane trees' "aggressive root system" which had penetrated and clogged up a stormwater main running down Bradley St and draining to the Mulwaree Ponds.

The council has also confirmed the root system's invasion.

"Every time we get a gullyraker, we get flooded," Mr Davies said.

He told the Post that hardly a week went by that someone didn't trip on raised footpaths and cracks that had developed from the roots.

Last week an elderly man tripped, causing a bloody nose and grazed face, Mr Davies said.

"They are very aggressive water finders and they're not suited to urban settings," he said.

"The water is under the concrete and footings so that's where the roots travel. In Goulburn we have long, dry spells, which don't help."

A report to Tuesday's meeting backed up Mr Davies' claims.

URBAN CURSE: Car dealership owner-manager Kieran Davies says an avenue of plane trees is causing extensive damage to infrastructure and flooding. He will pay for their replacement

"The damage to the footpath, stormwater pipe and kerb and gutter is extensive and will be ongoing should the trees remain," it stated.

Cr Margaret O'Neill described the damage as a "real safety issue".

"We have a duty of care to the ratepayers," she said.

But Cr Robin Saville lamented the removal of more CBD greenery. "I'm very

concerned about the number of trees being taken out," he said.

"Is the council aware of the disappointment within the community about the removal of trees? These are very mature and I don't want to chop more down."

He told the meeting that many people had decried the removal of a plane tree outside the AMP building.

Cr Sam Rowland too asked what feedback council had received on the plan, first floated in August.

"Most of what I received was negative and for that reason I can't support it," he said.

Operations director Matt O'Rourke replied that feedback had been "mixed".

"Yes, we've removed a lot of trees but we've also replaced them. They'll take time to grow," he said.

Deputy Mayor Bob Kirk wanted assurances that infrastructure would also be repaired, avoiding further flooding in the future.

Mr O'Rourke said this was the intention. It's understood Council will have to repair the stormwater main, footpaths, kerbing and guttering.

Cr Kirk ultimately voted against the removal, with Crs Rowland and Carol James.

Cr Denzil Sturgiss said the public had to appreciate that replacement species took time to grow, but the result would be better in the long run. Mr Davies agrees.

He is planting eight or more Chanticleer Pears, with their "less invasive" root system, at his own cost. The council will foot the $15,000 bill for the plane trees' removal.

Advanced species, four to five metres high, are expected to grow to 11 metres. They'll be under-planted with Chinese Jasmine, which has green and white flowers in summer. The trees will have concrete surrounds and planter boxes with brickwork stencilling.

"It will cost a few bob," Mr Davies said. "But I'd like a nice avenue of trees. In five years people won't even know anything's happened."

Western Advocate (/)

Condemned Durham Street trees safe a little longer

Murray Nicholls
April 20, 2015, 4 a.m.

(https://www.facebook.com/sharer/sharer.php?u=http://www.westernadvocate.com.au/story/3020531/condemned-trees-safe-a-little-longer/)

(http://twitter.com/share?url=http://www.westernadvocate.com.au/story/3020531/condemned-trees-safe-a-little-longer/&text=Condemned trees safe a little longer&via=westernadvocate)

(mailto:?subject=Condemned trees safe a little longer&body=Hi,I found this article - Condemned trees safe a little longer, and thought you might like it http://www.westernadvocate.com.au/story/3020531/condemned-trees-safe-a-little-longer/)

GOING, GOING: These London plane trees on Durham Street are set for the chop.
120814ctrees1

DURHAM Street's avenue of London plane trees has won another stay of execution, despite council finally agreeing it needs to go.

Councillors voted last Wednesday night to accept engineering director Doug Patterson's recommendation that the plane trees, and a number of crepe myrtles, be replaced with less invasive varieties – but with one small change.

Councillor Michael Coote told council while he broadly supported Mr Patterson's recommendation, he wanted to delay the removal of the trees until next year.

"It says here [in Mr Patterson's report] that work is due to start this year but I don't think in our bicentennial year we need to start removing a whole lot of trees," he told the council meeting. "Can we hold off until next year?"

Mr Patterson replied that the decision to remove the plane trees or retain them was completely up to council, and councillors could also decide on the timetable

for any work.

News Business

"This was an initiative of the council and if you want to postpone it by 12 months then that's up to you as well," he said.

Funding for the removal and replacement of the plane trees will now be included in the 2016-17 budget, meaning work will not start for at least 14 months.

Stage one of the three-stage project will see council staff remove all the crepe myrtles on the eastern side of Durham Street between Bentinck and Stewart streets, to be replaced with ornamental pistachios.

At the same time, a London plane tree outside a former motor dealership at 113 Dur-ham Street will be removed due to the significant damage its roots have done to the footpath.

In stage two, all remaining trees, including London plane trees, on the eastern side of Durham Street between Bentinck and George streets will be removed and replaced with Acer rubrum.

The final stage, now likely to start in the 2018 planting season, will see staff remove all existing trees on the eastern side of Durham Street between George and Stewart streets to also be replaced with Acer rubrum.

The three stages are budgeted to cost almost $190,000, with council planning to bring in mature replacement trees rather than saplings.

Mr Patterson told last Wednesday's meeting that work to repair footpaths in the area would be carried out after the replacement program was finalised.

NEWCASTLE HERALD
WEBSITE OF THE YEAR

Online outrage as nine trees removed from King Street

JASON GORDON
April 12, 2015, 9:30 p.m.

(https://www.facebook.com/sharer/sharer.php?u=http://www.theherald.com.au/story/3005602/trees-removed-from-king-street/)

(http://twitter.com/share?url=http://www.theherald.com.au/story/3005602/trees-removed-from-king-street/&text=Trees removed from King Street&via=newcastleherald)

(mailto:?subject=Trees removed from King Street&body=Hi,I found this article - Trees removed from King Street, and thought you might like it http://www.theherald.com.au/story/3005602/trees-removed-from-king-street/)

Nine mature London plane trees in King Street were felled by the council on Sunday. Picture: Brock Perks

THE scenes of outrage were very different to those which marred the Laman Street fig fiasco. But the felling of nine mature plane trees in Newcastle's King Street at the weekend still managed to generate plenty of talk and plenty of raised eyebrows.

The chainsaws were roaring early on Sunday as Newcastle council began work on rebuilding footpaths and gutters between Crown and Perkins streets.

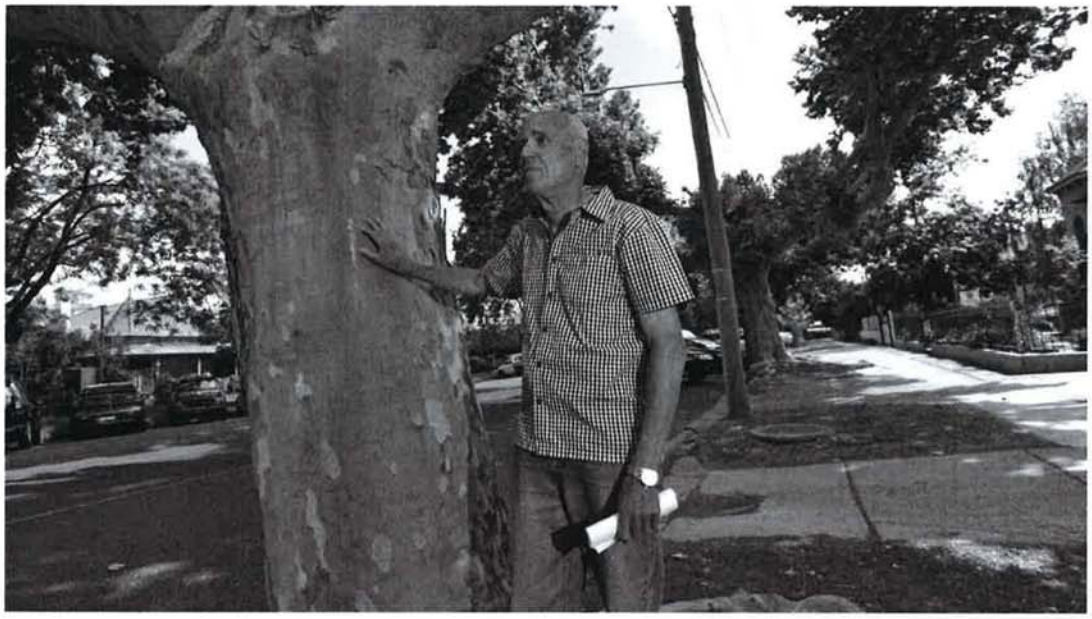
The tree felling attracted a number of phone calls to the Newcastle Herald and generated a significant degree of anger on social media where the council's motives and timing were strongly criticised.

The council said the mature London plane trees had been responsible for the deteriorating condition of footpaths and roads in the area and were thought to have damaged stormwater pipes beneath the road surface.

A spokesperson for the Newcastle council said the trees were cut down on a quiet weekend to ensure minimal disruption to the street during busy weekdays. The council made public announcements about the proposed works on Friday, while residents and business owners in the area were also given early notice.

The felled trees will be replaced by ornamental pear trees or 'Chanticleer'.

The project should be finished in October, replicating the works in King Street between Darby Street and the Tower Cinemas.



SAVE THE TREES: Kerry Geale is angry about the removal of plane trees in Wagga's Johnston Street. Council maintains they have reached the end of their useful life, but locals fear more plane trees could be removed, which will cost the city its charm. Picture: Laura Hardwick

THE planned removal of plane trees along Johnston Street could set an unwanted precedent, robbing other city streets of character and charm, locals fear.

Council will today start removing all plane trees on the northern side of the historic Johnston Street because they pose a "very high risk".

But Wagga Urban Landcare treasurer, Ros Prangnell, said the $8000 move could open the floodgates for council to continue to remove historic trees that characterise the city.

"It's a shame because they do add character," Ms Prangell said.

The former Greens candidate slammed plans to replace the Johnston Street plane trees with Chinese elms next winter as it would be a long wait until the same level of charm was offered.

"The city will certainly lose character and it's going to be years and years before the new ones add the same aesthetic, coolness and mitigate heat."

Ms Prangnell feared other plane tree-lined streets, like Gurwood, Simmons and

Kincaid, could be next on the agenda.

News Business

Wagga tree removalist, Rob Waugh, of Riverina Tree Fellas, understands the need to remove the trees because of the "absolutely horrendous" root systems that tear up pavements, such as along Gurwood Street. Mr Waugh believed regular upkeep of plane trees could have prevented their entire removal.

"They're dangerous because they haven't been pruned. Council go and put these trees in, but don't maintain them," he said.

Mr Waugh has knocked back numerous requests from Gurwood and Johnston streets residents to remove limbs that overhang into their yards because the trees are council's responsibility.

Council's strategic parks operations manager, David Walker, admitted plane trees along other streets could also be removed when they reach their useful life of 80 to 100 years.

"There are some individual specimens in the other streets listed that may require removal in the coming years and council is guided by the information provided in its Street Tree Audit as to when individual trees are removed and replaced," Mr Walker said.

In the case of Johnson Street, an independent arborist's assessment found the trees to be a very high risk, as well as causing damage to sewers, stormwater and kerb and channel. Mr Walker said the Chinese elm would not grow into the power lines and would provide shade in several years.